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THE LARYNGOSCOPE.

VOL. III. ST. LOUIS, MO., AUGUST, 1897. No. 2.

ORIGINAL COMMUNICATIONS.

THE SEQUELLA OF GRIPPE INVOLVING THE ACCESSORY CAVITIES OF THE NOSE.*

BY LEWIS C. CLINE, M.D., INDIANAPOLIS.

Professor of Diseases of the Throat and Nose in the Medical College of Indiana.

Influenza, or La Grippe, is now well understood as meaning a specific, self-limited, epidemic fever, characterized by a catarrhal inflammation of the mucous membrane of the air passages and their accessory cavities, and frequently the digestive and other mucous tracts of the body. The nervous symptoms are usually pronounced and manifested by extreme muscular and mental debility. Many papers have been written calling attention to the far-reaching influence of the disease and its power to invade and disturb the functions of the various organs of the body and lead to chronic and disabling sequella.

Hulmann, in an exhaustive study of influenza, says that it is transmitted directly from one person to another. He says it may also be carried by fomites. Stewart, in an address before the British Medical Association, reviewed at length the subject of influenza and its various manifestations. He claims Pfeifer's bacilli are the active cause, acting indirectly by their toxins.

*Read before the Marion County Medical Society, February 16, 1897.

The period of incubation varies from a few hours to several days, depending on the state of health and the resisting power of the individual infected. One attack does not confer immunity against future ones; in fact, relapse and re-infection have been frequently observed during an epidemic. In cases that have resulted fatally, it has almost invariably been found that death was due to some complication that led to secondary structural lesions and not to the Grippe itself.

The first manifestation of La Grippe is a feeling of general malaise and a swollen hyperæmic condition of the respiratory mucous membrane. In a large per cent. it is first felt in the naso-pharynx, then extending into the larynx and bronchial tubes.

These membranes are constantly giving off a viscid, muco-purulent discharge, causing more or less cough and clearing to expel it. The inflammation is usually limited to the upper air tracts, but it may extend into the finer bronchi. In some cases the gastro-intestinal tract is involved from the start.

There is always a feeling of "stiffness," or cold in the head, with frequent paroxysms of sneezing and a profuse discharge. The eyes become injected and watery. The mucous membrane of the mouth presents a red or congested appearance and the throat becomes sore.

In the milder forms the disease confines itself to the upper air passages and does not extend below the larynx. When the disease extends into the lungs it assumes a more serious aspect. Cough is rarely absent from the first and is always worse at night.

Without entering further into the discussion of the many phases of this disease, I wish to call your special attention to the malady as it involves the accessory cavities of the nose. I think this extension explains some of the severe neuralgias and nervous symptoms that are so often met with during these attacks.

It is generally believed by those who have not given the subject detailed study that nearly all the trouble that emanates from the nose is due to the engorged or hyperæmic condition of the turbinate bodies, thus giving rise to the various reflexes and neuralgias that occur about the head and face. An extensive observation of these cases has convinced me that the turbinate bodies are not responsible for all these troubles, but that the accessory cavities are the seat of inflammatory invasion, causing much of the trouble attributed to faulty turbinates.

When we study the accessory cavities and their relation to the nose, we find that they possess all the requirements for the growth and rapid reproduction of bacteria. Light is excluded; they possess the

proper degree of heat and moisture; they are removed from all disturbing influences; and are richly supplied with absorbing vessels. With all these favorable conditions, it is not strange that when they become invaded with the bacilli of La Grippe, the patient succumbs to their rapid growth and absorption into the circulation of their ptomaines. The presence of Pfeifer's bacilli in the accessory cavities of the nose sets up an active hyperæmia, or inflammation followed by sneezing and a watery discharge.

The membranes may, after a brief period of inflammation, regain their normal condition, or they may assume a chronic condition. Owing to the peculiar anatomical character of this membrane, it may take on a jelly-like or myxomatous condition from which a large amount of muco-purulent matter is discharged. The retention and pressure may give rise to great pain—the so-called neuralgia that is so common about the frontal, temporal and facial regions.

After a chronic inflammation of the frontal sinus, or an ethmoiditis is set up, it may continue for years confined to the mucous membrane without involving or destroying the surrounding bony structures. The changes that are more likely to take place after an acute inflammation of the ethmoid cells are granulations which pass through their successive stages, resulting in polypi, which, by their limited space and natural gravity, are forced down into the nasal cavity. The removal and treatment of many cases of nasal polypi has convinced me that a large per cent. have their origin in the ethmoid cells, as above indicated. The same conditions are found in polypoid growths in the ear.

I am also persuaded that, after an experience with seventy-five cases of suppuration of the antrum of Highmore, some of these cases owe their origin to drainage from the anterior ethmoidal cells and the frontal sinus. I recall that in all of my chronic suppurating ethmoidal and frontal sinus cases the antrum contained pus.

Dr. Thomas Fillebrown, of Boston, in a paper read before the American Dental Association in 1896, called attention to the intimate relation of the frontal and maxillary sinuses. He, together with Prof. Dwight, of Harvard, examined eight anatomical specimens in the Harvard Museum, in all of which they found that, instead of the infundibulum terminating in the middle meatus, it continued in the form of a groove or half-tube directly into the foramen of the maxillary sinus. If this be true, and I have no reason to doubt it, it explains the origin of many cases of empyema of the antrum found in conjunction with anterior ethmoidal and frontal sinus disease which may be directly traceable to attacks of La Grippe.

Fraenkle has stated that in one hundred and forty-six unselected autopsies in the post-mortem room of Hamburg, he found in forty per cent. of the cases involvement or disease of the accessory cavities of the nose. In twenty-two autopsies of children, dead of diphtheria, Wolff found the maxillary and ethmoidal sinuses involved in every case. Of thirty children who had died of diphtheria, measles, scarlet fever or whooping cough, Harke found suppuration of one or more of the cavities in every case, while in thirty-seven adults, dead of acute infectious diseases, there were thirty-one who had disease of the accessory cavities.

The following cases will serve to illustrate the after-effects or sequella of many of these cases of La Grippe:

CASE I.—Mr. B., age 32, was referred to me in 1895. He stated that he had always enjoyed good health until the winter of 1889, when he had a severe attack of influenza, or La Grippe. During this attack he suffered great mental and physical depression and had all the characteristic symptoms of the catarrhal form of the disease. Recovery was very slow; in fact, he had never regained his former energy. In the Spring of '93 he had another attack, much the same as the first, but less severe. After this attack he was frequently despondent and had forebodings of all sorts of diseases. On examination I found him skeptic, with no faith in any one's ability to help him. The right nostril was filled, high up, with polypoid growths and there was a profuse muco-purulent discharge coming, evidently, from the anterior ethmoidal region. The removal of the tumors and fully one-half of the middle turbinate, which gave drainage to the frontal sinus and ethmoid cells, finally gave him complete relief. He has since gained twenty pounds in weight.

CASE II.—In May, 1895, I was consulted by Mr. S., age 52, who gave a history of two marked attacks of La Grippe. The first was in February, 1890. The attack began with what he supposed was a severe cold in the head. It was accompanied with a great deal of pain about the head and face, which was soon followed by a profuse muco-purulent discharge from the nose. With this came great mental and physical depression, from which he recovered very slowly. The purulent discharge from the nose still continued more or less up to the Spring of '94, when he had another attack, but less severe than the first, which left him with an increased discharge from the nose. When I first examined him in 1895, I found the middle turbinate on the right side much enlarged, boggy and covered with yellow pus, coming, apparently, from the frontal sinus and the anterior ethmoidal cells. I also found the right maxillary sinus filled with

pus. His history for the last two years showed a varied degree of septic poisoning. I proceeded by degrees to open up these cavities by drilling the antrum through alveolar process and snaring with a cold snare the anterior half of the middle turbinate body, which was found to be hollow and communicating with the ethmoid cells. The drill was then used to farther open up the ethmoid cells. From these cavities I washed out an enormous amount of pus. Great improvement followed these operations and the patient says he feels like his former self, but there is still a slight discharge coming, apparently, from the frontal sinus. This case differs from the first in that it was of longer standing and there was no granulated tissue or polypoid growths.

These cases may, for convenience, be divided into three groups:

1. Those that run an active or rapid course and are often spoken of by patients as "risings in the head." After a brief period of profuse discharge, these cases, which constitute the great majority, return to their normal condition.
2. Those which assume a chronic form, passing into a granulating stage, finally resulting in polypoid growths.
3. Those which result in the suppurative form without granulating and may continue for years without destruction of the surrounding bony structures. These two cases reported are examples of the two latter groups.

The majority of cases that are met with in special practice are those of long standing, or those that are passing from the acute into the chronic stages from insufficient drainage. I am fully persuaded that these cases are more frequent than formerly, and that many of them are directly traceable to La Grippe.

In conclusion, I wish to say that of all the regions of the head, the group of cavities surrounding and communicating with the nasal fossa are, perhaps, the least understood as to their functions in health, and their far-reaching and disturbing influences in disease. Further, I believe that many of the headaches and neuralgic pains occurring in acute diseases are due to involvement of these cavities.

42 East Ohio St.

AN ESSAY ON THE NOSE—PHYSIOLOGIC AND IDEAL.

BY FAYETTE C. EWING, M.D., ST. LOUIS.

Fellow of the British Rhinological, Laryngological and Otological Association.

"A good nose is requisite to smell out work for the other senses."—*Winter's Tale*.

Fool: "Canst tell why one's nose stands i' the middle of his face?"

Lear: "No."

Fool: "Why, to keep his eyes on either side, that what a man cannot smell out he may spy into."

In its earthly pause, "that Divine Apparition" paid tribute to the nose. Yet, of all the organs of special sense, it is least in the regard of modern man. There seems hardly an exception to this rule. People are objectively cognizant of the service rendered by the eye, they are subjectively conscious, almost continually, of the estimable delights and uses of the ear. The average mortal, as well as the gourmand who lives to eat, would as soon dispense with his "maw" as his taste. Concerning touch, it often is the source of keenest pleasure, and seldom gives offense. When it does, we realize that voluntary action contributed to the fault, and censure is modified. To the many, the nose is merely a passage-way by which the air may reach the lungs, and if we are to judge by the leaden-eyed, narrow-faced dullards, whose jaws nestle in the recesses of their chests, that we meet here, there and everywhere, even this limited function is not respected. Few, indeed, are they who appreciate the wonderfully complex duties performed by the nose. To them it is only necessary that the air penetrate the lungs, and it matters not that such air is an irritant. Our bodies are maintained at a temperature of 98.6 degrees, and certain organs are ill adapted to extreme and sudden meteorologic changes. The spongy and cavernous tissue, lined by the nasal mucous membrane, is so abundantly supplied with a network of proportionately large blood vessels that a great amount of heat is given out. This heat-forming function is further increased by a re-duplication or folding of the membrane upon itself, thereby multiplying the muciparous glands and adding to the blood supply. The air passing over this membrane, so richly supplied with blood and mucous, is elevated in temperature, and its relative humidity increased, thereby saving the respiratory organs further down from irrita-

tion that would not fail to develop a pathologic condition. This becomes a most important function under our systems of heating offices and homes. The drying of the air by furnace and steam heat makes it necessary that moisture should be supplied by our systems, and nature has wisely adapted the nasal passages to this requirement. Absolutely dry air would induce suffocation, and that relatively so, if it entered the lungs orally, would soon produce intolerable dryness, with its train of results, since the pharyngeal and laryngeal glands, in response to a physical law, would perform a vicarious function for which they are not constituted. It has been proven that the atmosphere inhaled every minute upon London streets by an individual, contains an approximate average of about fourteen hundred microbes. When street sweepers or winds are stirring, these may be increased to fourteen thousand. It has been further demonstrated that air taken from fistulas in the lungs and trachea is sterile, and that obtained from the post-nasal chamber, if not entirely, very nearly so. This established, the question naturally arises, where have our microbes gone? Thousands of them are arrested in the vestibule of the nasal passages by the vibrissæ abounding there, and those that escape this net are washed back by the mucous that exudes so freely from the muciparous glands. This mucous contains a chemic element unfavorable to the growth of bacteria, and declared by certain eminent observers destructive of them. Free drainage, and this anti-bactericidal quality of the mucous largely explains the immunity from septicæmia in operations within the nose. A single one of these microbes, if it found suitable soil upon which to germinate, might produce incurable disease. Realizing that not only our physical comfort, but our very lives may depend upon respiratory efficiency, we have received an appreciable lesson in the value of noses. What would be the fate of the embryonic sounds conceived only in the larynx and sent forth to amplify in a larger, more expansive world that includes the nasal space? Important, indeed, is the part played by the nose in the production of harmonious sound. It is commonly supposed that the voice and all its qualities have their full development in the larynx. Recently there was sent across the sea, and exhibited to the British Rhinological, Laryngological and Otological Association, by an American surgeon, a man whose entire larynx had been extirpated for a cancerous growth, yet the patient not only spoke, but could be heard distinctly at the further end of the room. In truth, this organ possesses very limited capacity, its compass embracing only a few tones of the musical scale, while its independent sounds are harsh and discordant. The vibratory sounds of a bassoon

or hautboy, after detachment from the rest of the instrument, represent about the possibilities of the human larynx unaided by its resonators above. These facts have been conclusively proven by experiments in cases of wounds in the neck, wherein the vocal cords were exposed and separated from the cavities above; also on the extirpated larynx. When this column of air in the larynx is brought in contact with the resonators, of which the nasal chambers form very material parts, it becomes a self-sounding body, and the number of tones, as well as their quality, are increased and altered. The nasal chambers, though not in direct contact with the vocal cords, partake, nevertheless, of their vibrations just as the air in a violin is attuned and answers to the motion of the strings. It is a common term of reproach to say a person talks through his nose. The fact is, the opposite habit produces the "nasal twang." Compress the nostrils between the fingers and witness how absolutely the tone changes. That characteristic of the voice we call *timbre*, which enables us to recognize the tone of friend from foe, is due to the shape of the cavities above the larynx. The facility, rapidity and precision with which they may be attuned by altering their shape, constitutes the trained voice. When we consider that so small a thing as granulations in the naso-pharynx may make harsh or hoarse the emanations of a perfect larynx, how much more potent for harm may become an obstruction in the nasal passages, those cathedral aisles through which are heard an invisible choir? If parents did but realize this for their children while young, the world would be sweeter in story and softer in song. But for her nose, where would go the winged words of a Melba, that in their heavenward flight drag souls from the sloughs of the commonplace, like "trailing clouds of glory," quite to the stars. Millions have been swayed by a *quality* in the human voice, dynasties have stood and fallen at the magic of its command, and that millenium for which a Divine Prayer was lifted, and has reverberated down the centuries, made more manifest on earth through its inspiration and power.

As an organ of sense the nose is regarded more an offense than a delight, and it is seldom considered in its utilitarian aspect. A disagreeable but harmless odor is borne to us, and forthwith we would part with our noses, forgetting the virtue of a fault which a few hours previous enabled us to detect the invisible gases that might have made home a hospital.

Certain metaphysicians claim that all intellectual attainment is derived through the medium of the senses. According to them, impressions are remembered, and there is no intellectuality that is

indissoluble from sensuous experiences, an abstract thought being removed from sensation by successive substitution. This may not be entirely unquestionable, but who will deny the influence of sense upon spiritual development, its mystery as unfathomable as the genesis of life, as deep as the grave. The subtleness and unceasingness of its workings we may not know, but certain it is, there have been no great minds that were not wholly alive to all external impressions, pain or pleasure. Literature born of genius was not conceived in a monastery into whose recesses the senses peered through iron bars. And man may be nobler for the incense that is wafted from the thurible of the rose with Nature's soft prayer.

That which we hastily conclude is a cause for annoyance may become a source of infinite pleasure, as well as serve a higher purpose. In studying the flair of certain animals we are lost in wonder. Dogs have recognized their masters' apparel that had been cast aside for a decade, and certain wild animals can detect the odor of man twenty-four hours after his passing. The human nose has proven itself capable of a development not less remarkable. The Japanese have a Game of Perfumes, which was originated as early as the tenth century, but came to perfection during the height of the Japanese renaissance, near the end of the fifteenth century. During this period the sense of smell was elevated to a fine art. In order to play this incense game, a box with many small receptacles, filled with various perfumed woods, was provided. Accompanying the box were a silver-plated mica platter, a little brazier, spatula, and some specially shaped pieces of charcoal. Ornamental counters, corresponding with the perfumed woods, were a part of the outfit. A small quantity of one of the woods was lifted from its receptacle with the spatula and placed on the platter, some charcoal was lighted in the brazier and the platter suspended over it until the fumes filled the room. One of the participants, of which there could be any number, would then guess the odor, select the counter and place it on the checkerboard. The French archæologist, Didron, narrates an account of a Britany peasant who visited Paris with a cabinet of drawers that he called a "Perfume Harmonium," but nasal artists were so scarce in that otherwise sensual city that he was sent home unhonored and unfranked.

There can be no doubt that an importance was associated with the sense of smell by the ancients far beyond our estimate. So esteemed was it that aromas were offered to the Gods to propitiate them, and appease their wrath. In our own time there are remarkable evidences of its development. Helen Kellar, deaf, dumb and blind, is always

conscious when anyone enters her room, no matter how noiselessly. A certain blind man, in New York, is capable of distinguishing passers on the street whose hands he has once sniffed. James Mitchell, well known to the medical profession, was blind, deaf and dumb from early infancy. To compensate for afflictions, seemingly so insuperable, nature gave him a flair that enabled him to remember those with whom he had come in contact, and draw fine distinctions of character. Thus, we may have an instinctive and discerning faculty in our noses, latent, but potent for good when its services are required. Suggestive of this is the old saw that "men follow their noses." And, though this be not inseparable from humor, it is more than a paradox. In their evolution men's noses have grown with their minds until what is true of the races has become applicable to the individual, and we are wont to measure the intangible by the physical and declare that "great men have great noses." The aesthete who turns from the contemplation of the classic nose, creation of the Supreme Architect, to the seeming transcendent beauties of the Parthenon, "the one thing finished in this hasty world," might ask why the Greeks did not pattern the divine plan. Then would their temples for the Gods have been built by the Gods. Post and lintel yielded line and symmetry, and served a cold artistic purpose as to the polished columns and chiseled cornice of a mausoleum. White and fair, but a pearlless shell. That noble arch that upholds the brow is type of conscious strength and order. It supports an embodied spirit, its curve is grace and beauty. Physiologists have directed attention to the fact that the nerves of smell reach the brain by a shorter course than do the sense conductors of any other organ. And short is the bridge spanning the space that separates the soul from its footstool, over which it passes when it comes down to materialize in sight of man. In that rugged ridge is the invincibleness and fixedness of a Hannibal, a Marlborough or a Wellington. And so we may have, as there once was, manifest in a nose, the imagination of a Shelley, the sensitiveness of a Keats, and the intellectuality of a Bacon. If this were all. The "bottled nose" betokens a bottled soul in the lurid light shed by the spirit of rum above, its temple usurped and a broken bridge between. And, there are blunted noses, and those that are small and narrow, and crooked and distorted, and wanting in character in as many ways as the souls of men.

Grand and Lindell Boulevard.

SUPPURATIVE INFLAMMATION OF THE FRONTAL SINUSES.*

BY F. E. SAMPSON, M.D., CRESTON, IOWA.

With the location and general anatomy of the frontal sinuses I take it for granted we are well acquainted. These cavities have probably suppurated in some individuals ever since they formed a place in the noble brow of man, and may be before.

As a distinct entity, suppurative inflammation in this region has not occasioned much remark until recent years. Along with the other accessory cavities of the nose the frontal sinus is beginning to attract something like the attention it deserves.

I am aware that most of our text books treat the subject rather lightly, and refer only to the cases in which the outlet becomes occluded. They speak of the frontal sinus as a well-drained cavity, and on this account deserving little notice so long as the infundibulum is open. I might mention the fact that the uterus is a well-drained cavity, and on the same ground urge expectancy in the treatment of intra-uterine suppuration so long as the os remains open. We have certainly learned to look with suspicion upon suppurative inflammation in any part of the body, especially in any part that is in close relation with the brain and thereby rendering possible the occurrence of thrombosis of its sinuses, infection of its coverings and metastatic abscess in its substance. The study of suppurative lesions of the nose and ear, with their accessory cavities, is throwing light on the etiology of encephalitis as the study of the vermiform appendix has elucidated peritonitis.

Furthermore, suppuration of the nasal accessory cavities is generally recognized as having an important bearing on general health, aside from the local mischief and its possible transmission to the encephalon.

When we further remember the position of the frontal sinus in relation to the other accessory nasal cavities, with its outlet in close proximity to those of the ethmoid cells and maxillary sinus, it is at once apparent that persistent suppuration from the frontal might be a

*Read by title before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, Mo., April 7, 1897.

source of constant reinfection of these cavities. I have been repeatedly impressed with this fact by cases of maxillary abscess that were treated without result until the corresponding frontal sinus was made a party to the offense and placed under discipline. Enough as to the importance of considering this lesion.

Infection of the frontal sinus usually occurs by extension through the infundibulum, or directly from without, by trauma. Neoplasms within the sinus may become infected through the circulation. Contributory features are, inflammation of the intra-nasal structures. In obstructed outlet cases, narrowing of the nasal cavities by deviated septum, polypi, or hypertrophies is often an important element in producing occlusion of the infundibulum. The acute infectious diseases, especially La Grippe, seem to establish conditions favorable for the infection of this as well as the other accessory cavities of the nose.

Suppuration in the ethmoid may break through and directly infect the frontal sinus.

Abscess of the maxillary sinus may be the primary lesion and establish direct communication with the frontal sinus.

The diagnosis in true empyema is not generally difficult. With complete obstruction of the outlet, the pressure phenomena become pronounced. The pain is severe. Mental application impossible. Insomnia often a marked feature. Percussion over the sinus elicits pain, and trans-illumination shows a dark area over the suspected region. The abscess may bulge into the orbit. With this array of evidence, the only thing to be excluded would be a solid neoplasm, which could not be positively excluded without invading the cavity.

The cases in which the outlet remains open, or is intermittently obstructed, are not so easily recognized. Pain may be referred to the frontal region in maxillary sinus abscess, when there is no suppuration in the frontal sinus. On the other hand, suppuration may occur in the frontal sinus with but little or no pain, and percussion elicit no tenderness, so long as the outlet remains open.

History of a purulent discharge from one side of the nose is highly suggestive of trouble in some of the accessory cavities. Having ruled out foreign body, rhinolith, septal abscess and purulent dacryocystitis, we proceed to determine which of the accessory sinuses is at fault. With the exception of the sphenoidal sinus, all these cavities drop their overflow into the middle meatus, where it may be seen along the lower border of the middle turbinate. Much has been written by way of attempt to locate the lesion by appearance of pus, as to color and consistency, by the constance or intermittance of its flow,

by posture of the patient and observing the location of the pus—the inspected parts having been previously cleansed. Evidence derived in this way is of itself very indefinite. And furthermore, even though we be positive of pus in the maxillary sinus and ethmoid cells we may be still in doubt as to the frontal sinus.

Trans-illumination is by some considered unimpeachable. While my experience with it has so far been satisfactory, yet I can see how it might lead one into error.

Ordinarily, when the sinus shows dark we will find pus, or at least a greatly thickened mucosa; but let us run briefly over the possibilities; if the sinus shows clear, it means one of two things, it is either healthy or contains a mucocele; if clearer than its fellow, it does contain a mucocele; unless the other sinus be diseased, absent or contains a solid neoplasm. If it shows dark, the sinus contains pus or has a thickened mucosa—unless it be a solid neoplasm or the sinus absent and its place occupied by a part of the frontal lobe of the brain.

We must also bear in mind that even though we find pus in the middle meatus, can exclude all the other accessory cavities from participation and find a dark area over the frontal sinus; that all these conditions could come from a neoplasm which had become infected either via the infundibulum or through the circulation. In other words, that the certainty of pus coming from the frontal sinus does not rule out neoplasm.

It appears, then, that our diagnosis of frontal sinus suppuration, unaccompanied by complete obstruction of the outlet, must often, if not usually, be reached by the consideration of well-selected probabilities. Assuming now that we have a suppurative lesion of the frontal sinus, what is to be done about it? I shall not attempt to enumerate the various measures which have been accused of *curing* this trouble. Many of them doubtless get well spontaneously. If we happen to be treating the case by some mild or soothing method, we naturally take credit unto ourselves—the credit often being about the same quality as that which obtains in nursing an abscess elsewhere—until it breaks. I do not mean to say that methods of treatment other than operation are without value. In the absence of urgent indications, expectancy is often a good line to follow—at least until we see that nature, unassisted, is not going to get through with it. Before resorting to operation on the frontal sinus, we should do what we can for any nasal disturbance. Keep the parts clean, and, even if the infundibulum is occluded, applications of cocaine solution about its lower orifice may restore its patency. If we succeed in opening

the passage, and in cases where it has remained open, we may try to medicate the sinus with some gas, such as formaldehyde, forced into the nose under pressure. Our English friends claim good results from oxygen. The general condition of the patient must not be forgotten.

If these measures fail to give the desired result, we have the operative procedures.

The indications for operation I would state as follows:

1. Retention of pus within the sinus, not relieved by the above mentioned measures.

2. Persistent purulent discharge from the frontal sinus, after any other involved accessory cavities of the nose have received proper attention, viz.: Opening and treatment of the ethmoid cells and maxillary sinus, in event of their involvement.

3. If, after months of thorough but unavailing treatment of suppurative disease in the ethmoid or maxillary sinus, trans-illumination of the frontal sinus shows a dark area, we are justified in opening this cavity from without, even though there be no evidence of empyema of the sinus, or positive proof of purulent flow through the infundibulum.

Before considering methods of operation, let us briefly review some recent studies in anatomy of the frontal sinus. Dr. Tilley, after examination of 120 skulls, reports as follows: "The capacity of the frontal sinuses varies from a few minims to half an ounce or more. The sinuses may be absent in the adult. The prominence of superciliary ridges is not a safe index to the capacity or extent of the frontal sinuses. The two cavities are not always symmetrical; the cavity on one side may be small while its fellow may be large; or it may even be absent on one side, the other being well developed. The openings and direction of the infundibulum are also subject to wide variations."

In speaking of operations I shall not refer to methods in detail. The frontal sinus may be approached from below, via the nose, or from without—opening through the anterior wall. By the intra-nasal method an attempt is made to catheterize the infundibulum. In event of failing in this, a way is broken through with gouge, bur or trephine. This method has distinguished advocates. A glance at the anatomy of the part, the frequent anomalies, and a review of the disasters that have followed this method, tends to make one afraid of it. A few months ago Vohnsen reported a case where the attempt was made to medicate the frontal sinus by blowing powder through a catheter, supposed to be in the infundibulum. At the autopsy it

was found that the cranial cavity, instead of the sinus, had been medicated. Another, reported by Mermod, in which a probe, and subsequently a catheter, was supposed to have been passed into the sinus *per viam naturalis*. Fatal meningitis followed, and at the post-mortem, part of the frontal lobe of the brain was found to occupy the space usually occupied by the sinus.

Even when successfully done, this method only gives drainage, and possibly enables us to medicate the cavity. The cases that can be catheterized *without force* will, in my opinion, get along fully as well without. When force is used, the operation is painful and is likely to require frequent repetition. It does not give us exact information as to the contents of the cavity. It may be the means of infecting a neoplasm which has given us the pressure symptoms and trans-illumination shadow of empyema, and possibly delay the recognition of conditions that should receive prompt and radical attention.

These considerations, along with the doubts that must often arise as to the accuracy of diagnosis, lead me to believe that where operative interference is indicated, opening through the anterior wall is to be preferred, and an opening of sufficient size to permit free exploration.

Bilateral Zoster of the Mouth and Pharynx.

This affection presented itself in a male patient, seventy-eight years old (M. Lermoyez and M. Barozzi, *N. Y. Med. Journ.*, March 12, 1897). No general symptoms appeared except pain in the mouth for forty-eight hours. The eruption occupied the palatine arch, the velum of the palate, the upper gums, and the neighboring gingivolabial grooves. It was formed of groups of vesicles seated upon erythematous patches, and was seen as a symmetrical zone, around the floor of the mouth. Several attacks occurred, but no eruption was observed on the body. The disease lasted about four weeks. Owing to the absence of general symptoms and relying upon the perfect symmetry of the eruption, a diagnosis was made of bilateral symmetrical bucco-pharyngeal zoster of the parts innervated by the second branch of the trigeminal nerve.

M. D. L.

DISEASES OF THE GLOSSO-EPIGLOTTIC SPACES.*

BY DR. J. F. BARNHILL, INDIANAPOLIS, IND.

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I have felt justified in reading a paper before the association on the diseases of the glosso-epiglottic spaces from the following reasons:

First, the subject being comparatively new, little is said concerning it in text books; and medical journals have had fewer articles concerning this locality than about others of less importance. Second, the rather large number of cases I have seen who have received treatment for catarrhal conditions at the hands of specialists of experience, the patients having been skillfully treated in a limited way, every pathological condition having received careful attention from the alae nasi to the cricoid cartilage, excepting the spaces between the tongue and epiglottis; and yet these patients considered themselves uncured, complaining of many or all of the symptoms enumerated in the body of this paper. Third, the frequency of the diseases of the spaces, and the importance of recognizing and appropriately treating the same.

The pathological conditions found in these fossae are, I should say, giving them somewhat in the order of their frequency, hypertrophied lingual tonsil, varicose veins, papilloma, fibro-sarcoma, and carcinoma. Syphilitic and tubercular ulcerations are found here, but it was scarcely the intention to discuss them. The spaces, particularly when occupied by a growth of any kind, are quite subject to acute and chronic inflammatory conditions.

Enlargement of the lingual tonsil, varying in degree from that barely perceptible to masses projecting over and partially concealing the epiglottis, existed in about twenty per cent. of all the cases I have examined with reference to the matter. Varicose veins were found in about one per cent. of consecutive throat cases, without reference to age, but limiting cases to those past middle life the per cent. is higher. More cases were males than females.

I have seen two cases of papilloma here: one in a very nervous

*Read by title before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, Mo., April 8, 1897.

lady, age thirty-one; the other a gentleman, age thirty-five, a man of great muscular development and perfect health, except the distressing cough to which the papilloma gave rise. In addition to the warts at the base of the tongue, his integumentary surface bore two-score of warts and moles. Those in the glosso-epiglottic spaces were multiple, the size of a ripe currant, and two were predunculated. This surface was studded with horny epithelial spines after the type of the "seed" wart. I have seen one case of fibro-sarcoma which was secondary. A general surgeon had a few months before removed several lymphatic masses from about the body of the jaw, after which the faucial and lingual tonsils began immediately to enlarge, the former crowding the soft palate far upward, and laterally extending into the isthmus beyond the median line. The lingual tonsil projected upward against the faucial and backward over the epiglottis, giving rise to great difficulty of deglutition and respiration. It could be easily seen in this situation when the mouth was open. It weighed more than an ounce after removal. (Reported to Marion Co. Medical Society.)

As to symptoms, a considerable number of patients, under my care for other ailments, have been observed to have greatly enlarged lingual tonsils without any complaint whatever, and it has not been uncommon to find hypertrophies in these spaces large enough to infringe upon or even overhang the epiglottis, with the patient disclaiming all knowledge of anything ever having been wrong with the throat. Others with much smaller and comparatively insignificant growths complained of many or all the symptoms here enumerated. I account for this in two ways: first, in persons of highly sensitive nervous systems, the slightest touch of a foreign body against the hypersensitive epiglottis will excite the reflex centers of the air tract in a degree that would not be possible in one whose nervous tone is normal; second, the conformation of the epiglottis in many cases is such that instead of standing up and away from the base of the tongue, as it normally should, it curls unduly forward, projecting its crest directly against the base of the tongue and over the glosso-epiglottic spaces, thus unduly infringing upon the smallest nodule of lymphoid tissue, and giving rise to symptoms equal in severity to those found in cases where the spaces are filled with tumors many times larger, but with normal epiglottis.

A feeling of irritation, fullness, and a disposition to clear something from the throat is a very constant symptom. Cough, varying in degree from an occasional dry hack to the most distressing and frequent paroxysms, is common. Such violent coughing sometimes

ruptures one or more of the venous radicles of the spaces, which are often varicose, and particularly in patients past middle life, thus giving rise to a smart hemorrhage, which, as a matter of course, greatly alarms the patient and may prove perplexing to the attending physician, if he be not skilled in the use of the laryngoscope.

I have seen many cases who coughed but little, and felt but slight annoyance, except at the time of taking food, when there would be such violent paroxysms of cough as to necessitate the patient's leaving the table, and sometimes vomiting. I have also seen a few of another class in which the tumor projected so much over the epiglottis that during the second stage of deglutition, when the tongue is normally carried far backward over the larynx, the growth being thus carried still further backward, would partly fill the pharynx, and thus mechanically obstruct the act of swallowing, the patient complaining that the throat felt as if it had "partly grown up."

Functional heart disease is often much aggravated, and I believe sometimes wholly caused by disease of these spaces. Globus hystericus has usually accompanied such cases, together with other symptoms commonly classed hysterical. I believe some of these cases are cured by proper attention to the upper air tract, and particularly the spaces under consideration.

Other symptoms are sore throat, the nature of which can only be determined by laryngoscopic examination, when there may be found to exist any one of the varieties of tonsillar affections which are better known in connection with the diseases of the faucial tonsil, such as acute lingual tonsilitis, acute follicular lingual tonsilitis, etc., and, while I have never seen, or know of no reported case, it seems reasonable that diphtheria may attack the lymphoid tissue here as readily as in the tonsillar tissues higher up. Voice weariness, hoarseness, scratchy sensations in the throat, and a long list of other sensations, peculiar to each case, are often found.

Treatment—Many cases are nervous or anæmic, and a considerable per cent. of the female patients have menstrual disorders. The peculiar nervous state at the menopause, together with the increased tendency toward varicose veins, causes suffering at this period from conditions that had before gone unnoticed.

Such cases require constitutional treatment appropriate to each.

Tumors of the spaces, which have been so innocent as to be unnoticed by the patient, should be let alone. Where annoying symptoms are present, extirpation of any hypertrophy should usually be advised. Surgeons differ as to methods of removal, some preferring excision, some the wire loop or galvano-cautery, while a few believe

caustics and iodine compounds quite sufficient. I always use the snare when the growth projects sufficiently to be readily engaged by the wire loop. When the tumors are flat or small, I know of no better instrument than the Myles' lingual tonsillotome. Patients complain of much less pain, and there is very much less inflammatory reaction and general distress when the snare or tonsillotome has been used. The cure is also more rapid. I use the electro-cautery on varicose veins, very small hypertrophies that are difficult to engage in the snare or tonsillotome, and for other reasons which rarely arise. The cautery gives rise to but very little pain at the time, the part being thoroughly cocainized, but the after-pain and distress, usually arising from the inflammatory reaction set up in the loose tissue of the spaces, has been in my hands the source of such great annoyance that I now resort to this method only in selected cases. When electricity has for any reason been used, I have observed the least trouble, and the best results, when I employed a blade or needle-pointed electrode which could be plunged into the center of the growth and the destruction thus be accomplished from the center outward. As a matter of course, great care should be exercised not to use the cautery too freely, one or two nodules only being punctured at a sitting, and the greatest care exercised in avoiding injury to neighboring healthy tissues.

I have never used chromic or other acids as destructive agents in this region, knowing the difficulty with which the space is rendered sufficiently dry to prevent spreading of such agents to surrounding tissues. With one exception I have abandoned the use of the various iodine compounds and other so-called sorbefacients, their action, if at all beneficial, being so slow that patients either cease their visits or ask to be relieved by the more rapid method of extirpation or destruction. The exception referred to is the iodine and carbolic acid compound recommended by Chappell. This preparation has the decided merit of sticking to the spot to which it is applied and not spreading to adjoining healthy tissues. Its application is about as painful as the more radical methods, and requires so much longer time to accomplish its purpose that one is only justified in using it with timid patients who are afraid of all "operations."

222 N. Delaware St.

THE RELATIONSHIP OF OBSCURE THROAT SYMPTOMS IN ADULTS TO THE PHARYNGEAL TONSIL.*

BY H. MOULTON, M.D., FORT SMITH, ARK.

The following symptoms are sometimes observed: A feeling as of a foreign body in the pharynx; a desire to clear the throat, accompanied by secretions and hawking; when nothing, or very little, can be cleared from the throat, and when such act gives no relief. When we examine the throat and find no abnormality of the uvula, tonsils, pharynx, larynx, lingual tonsil or nasal passages, and an apparently normal naso-pharynx, we must make repeated observations of the latter. We will sometimes find in this space no obstruction whatever and no discharge, but a slight general thickening of the adenoid tissue in the vault, which, in most cases, would be overlooked, and which, in most persons, would cause no symptoms. But in such cases as I have described, if this tissue is removed we will almost certainly be gratified with relief of all the symptoms.

Some cases are reported in the paper in which the patients had been much annoyed for years and sought treatment in vain until this operation had been done.

These cases prove that the pharyngeal tonsil must sometimes be operated upon when the usual indications, such as obstruction to respiration, naso-pharyngeal discharge or ear symptoms are absent. The symptoms present in these cases were considered as purely reflex and disappeared on removal of the cause.

The operations were done under cocaine, with post-nasal cutting forceps.

*Abstract of Paper read by title at the Western Ophthalmological, Otolological Laryngological and Rhinological Association at St. Louis.

An Intra-Nasal Application for Epistaxis. (*N. Y. Med. Journ.*, May 10, 1897.)

Bouzier suggests the following combination:

R.	Benzoric Acid.....	} Each, 1 part.
	Tannic Acid.....	
	Carbolic Acid.....	
	Collodion.....	
		20 parts.
		M. D. L.

THE INTRA-CRANIAL COMPLICATIONS OF SUPPURATIVE DISEASES OF THE MIDDLE EAR.*

BY J. MORRISON RAY, M.D.

Clinical Professor of Ophthalmology, Otology and Laryngology in the University of Louisville, Etc., Louisville, Ky. Surgeon Louisville City Hospital.

It seems scarcely in order for me to ask farther attention to the importance of a familiar acquaintance with the parts of the bony casing of the skull implicated in inflammatory conditions involving the auditory apparatus. Those who have preceded me have considered the various forms of suppurative inflammations in the organ and have thoroughly impressed upon you the anatomical arrangement and relationship of the tympanic cavity, which is the primary seat of pus formation in nearly all pyogenic processes originating in this region.

The temporal bone as a whole is one of the most complex bones that make up the cranial walls. Every student of medicine can vividly recall the many hours of distrust and unrest that preceded the quiz by the Professor of Anatomy when this intricate bone with its many sides, surfaces, eminences, depressions, foramina, fissures, canals and fossæ, was under consideration. It is truly the pons assinorum of the medical student.

When we desire to consider the complications that may result from pent-up pus in the tympanic cavity, a thorough knowledge of the topographical anatomy of this bone becomes essential. The usual custom of considering it solely as a part of the organ of hearing, and therefore of value to those only who are directly concerned in the treatment of ear diseases, is fast passing away.

To draw the attention of those not engaged daily in aural surgery to the frequent occurrence of diseases in vital organs directly due to primary pathologic involvement of this bone, is the object of this paper—and to impress upon them the importance of considering it in all diseases of the cranial cavity when the formation of pus or inflammation of the membranes surrounding the brain is suspected. Indeed, experience is fast fixing upon the temporal bone in relation

*Read in a discussion on Suppurative Diseases of the Middle Ear and their Complications, before the Kentucky State Medical Society, May, 1897.

to the cranial cavity the same importance that all progressive surgeons now bestow upon the appendix, when purulent inflammation attacks the serous surface found in the abdominal cavity.

To the aural surgeon I need not speak of the dangers resulting from pus in the tympanum. In his anatomical dissections and study, and his clinical experience, he is certainly amazed that so few neglected cases of disease in the tympanic attic and mastoid antrum prove serious. A consideration of such conditions far surpasses in importance the mere question of audition. The roof of the tympanic attic which separates this cavity from the middle cranial fossa is very thin in most cases, and the bony elements even absent in many. I have seen this plate of bone so attenuated in post-mortem investigations that it was easily translucent under dim illumination by ordinary daylight.

The tegmen antri is even less resistant than that of the attic and its posterior wall is often directly in contact with the sigmoid groove in which lies the lateral sinus. In most cases one of these routes is the course taken by the pus in passing through the bone, yet it may travel by way of the internal auditory meatus, traversing and destroying in its course the auditory perceptive elements contained in the internal ear—or it may pass into the canal for the tensor tympani muscle and perforate the overlying bone, or even pass into the nasopharynx or glenoid fossa. Besides these channels for direct extension, there is no question but that in a certain number of cases, pyemia and meningitis result from ear disease, without destruction of the bony wall, the pyogenic organisms passing into the lateral sinus through the mastoid vein or to the meninges by the veins passing through the aqueductus vestibuli.

A consideration of the intra-cranial complications thus follows naturally upon the study of the anatomical surroundings of the tympanic cavity. If the roof of the attic or antrum is the course of the pus channel it will produce a subdural abscess, or rupture the dura and a lepto-meningitis or a pus-accumulation in the middle or temporal lobe of the cerebrum will result. Should the course be through the back wall of the antrum or adjacent cells, then the pus will come in contact with the lateral sinus in the sigmoid fossa, and by destruction of the venous wall empty the pus into the sinus and a pyemia alone or complicated with a meningitis becomes established; or, if its course is farther backward an abscess in the cerebellum follows.

All the intra-cranial complications of ear diseases may, from what we have just stated, be divided into:

1. Those affecting the membranes surrounding the brain, a meningitis or subdural abscess.
2. Those affecting the substance of the brain, either the temporal lobe of the cerebrum, or the cerebellum, producing pus accumulation.
3. Those in which pyemic symptoms result from the pyogenic process perforating the walls of the lateral sinus in the sigmoid groove.

Certain complicated cases present themselves in which two or more of these processes are found in the same subject. A knowledge of the frequency with which such complications occur in the course of pus formation is of the greatest value. Our experience justifies the statement that chronic suppuration involving the upper portion of the cavity of the tympanum and the connecting mastoid antrum is the form most often to be suspected. Especially is this true of the so-called quiescent perforations that have resulted from the eruptive fevers in early life. It may follow the acute suppurative process, but we expect to find mastoid periostial abscess in the majority of such cases.

The personal experience of every aural surgeon yearly brings him in contact with a number of cases in which death has resulted directly from ear disease. My own observation for the past year includes six fatal cases in an approximate total of 350 ear patients treated.

Gruber, in a study of the post-mortem records of the Vienna General Hospital, found that of 40,073 autopsies 1,806 deaths resulted from intra-cranial diseases of all forms. Of these 1,806 cases 232, or 12.8 per cent., were of otic origin.

With reference to the relative frequency of the different complications found in the cranial cavity as a consequence of otitis, Koerner, in 151 observations, found abscess of the brain substance in 67, pyemia and sinus thrombosis in 61, and a diffuse meningitis in 23.

Of the utmost importance in dealing with the grave sequelæ to ear disease is an accurate and timely diagnosis. All those who have seen many such cases, agree that often this is most difficult.

The various symptoms presented in abscess, sinus pyemia and meningitis are frequently mixed or the early symptoms impossible to obtain.

Meningitis is usually preceded by meningeal irritation in the form of headaches, slight nausea and dizziness with increase of pulse rate. After the pyogenic organisms from the ear have infected directly the

membranes, a purulent meningitis rapidly develops. Headache becomes violent, vomiting frequent, temperature high and pulse rapid, with dry tongue and great thirst, followed by delirium, stupor, muscular spasms, especially of the neck, paralysis of the muscles of the eye, optic neuritis, coma; all these symptoms following a lessening of the pus flow from the affected ear.

If the inflammatory process be slow in development, it may become localized, directly overlying the infective focus from the ear. The meningeal symptoms become centered in a pachymeningitis or possibly the pus becomes walled in and an extra-dural abscess forms, such conditions being far less destructive than when the pyogenic process penetrates the dura into the capillary network found on its inner surface; in such event a wide-spread, violent lepto-meningitis ensues.

Thrombosis of the lateral sinus generally results when the erosion occurs through the posterior wall of the mastoid, the pus penetrating the sinus wall and emptying the infectious material directly into the circulation—the blood becomes coagulated, the sinus obstructed and a septic thrombosis established.

Involvement of the sinus quickly develops general pyemic symptoms, high fever with frequent rigors, producing great fluctuations of temperature. Together with these symptoms, those of great pain radiating from the mastoid, with œdema over the bony prominence behind the ear, distension of the veins in the cervical region, especially the internal jugular along the border of the sterno-cleido-mastoid, and optic neuritis are generally sufficient for a diagnosis.

Abscess of the brain tissue resulting from infective material from the ear is generally found to involve the temporal lobe of the cerebrum by extension from the middle ear through the roof of the attic or antrum opening directly into the middle cranial fossa; or the cerebellum by necrosis occurring through the back wall of the mastoid or through the internal auditory meatus, into the posterior cranial fossa. The frequency with which the abscess is situated in the cerebrum indicates the proneness for the suppuration to extend through the tympanic roof. Barr, in 76 cases, found the abscess fifty-five times in the temporal lobe, thirteen times in the cerebellum. Koerner, of 100 cases, found 62 in the middle cerebral lobe, 32 in the cerebellum and in six cases both the temporal lobe and cerebellum were involved. The investigations of Gowers and others farther show that nearly three-fourths of all brain abscesses are of otic origin. All authorities agree that the diagnosis of brain abscess is extremely difficult and its location especially uncertain. No reliance

can be placed on the condition of general health. The abscess is usually slow in its development, and those due to ear disease encapsulated. Abscess is to be suspected when persistent headache, nausea, vomiting, dizziness, subnormal temperature and a slow pulse accompany a lessening of the ear discharge. This becomes confirmed when are added constant localized pain, increased by percussion, attacks of transient loss of consciousness, narcoma, defective cerebation and optic neuritis. Most abscesses due to ear disease occupy the white substance of the lobe and thus focal symptoms in the way of special paralysis are usually absent. When the left temporal lobe is involved, however, aphasia is apt to be present.

When the brain abscess results from mastoid disease the purulent focus is most often in the cerebellum. The symptoms suggestive of cerebellar abscess in the early stages differ but little from abscess in the cerebrum. Vertigo, nystagmus, dilated pupils, interference with respiration and a constant pain over the occiput will usually direct attention to this region.

Heiman states that if due consideration is given to all the symptoms elicited, in three-fourths of the cases the course is such that a diagnosis can be accurately made.

When a case presents itself in which the symptoms point to intracranial extension of a middle ear disease, the symptoms should be carefully noted, and the fact that we are unable to differentiate between a brain abscess, a meningitis or a septic thrombus in the sinuses should have but little influence in controlling our surgical procedure. If left to nature the result is always fatal. The purulent collection breaks into the ventricles or infects the entire meningeal covering and a fatal issue is inevitable.

Scarcely a decade has passed since Barker reported the first successful operation for brain abscess, dependent upon ear disease, yet in that time more than one hundred and fifty successful cases have been reported.

In considering an operation, the primary seat of the suppurative process should not be overlooked, therefore the first step should always be to open the mastoid antrum and cells and thence the middle ear, getting directly at the source of pus formation. The revelations here unfolded should be the guide for further interference. If a sinus is found leading through the roof of the antrum or attic, this may be enlarged and the brain cavity opened, or an opening can be made with the trephine. This is best made one and one-half inches above and an inch behind the external ear, and in this way we are able to explore the temporal lobe, the most frequent seat of abscess.

If, after entering the mastoid, an opening is found leading toward the sigmoid fossa, it is better to enlarge this and lay bare the lateral sinus as it lies in the sigmoid depression. If evidence of pus surrounding it is present, and if pulsation of the blood column is absent, the sinus should be opened and the thrombus thoroughly removed.

If the cerebellum is to be investigated, a trephine button can be removed at a point one inch and a half behind the meatus and one-half inch below its horizontal plane. Whenever the brain tissue is to be explored for abscess a search is best made with a small trochar and cannula, or punctures can be made in different directions with a scalpel.

In all these operations the most scrupulous aseptic surgical technique should be followed. The skin incision should be large enough to thoroughly lay bare the bone covering the area to be investigated.

The best instruments for making the bone opening are unquestionably the chisel and mallet for the mastoids, and the trephine, reinforced by the Rongeur forceps, for the cranial cavity. Macewen, to whom we are indebted most for the impetus given this line of surgery, operates with a rotary burr propelled by the ordinary dental engine. We must start on the principle of making a wide and thorough opening in the bone, removing all structures that are diseased, expose the source of suppuration so freely that pus cannot possibly meet with obstruction in its exit.

Pritchard advises the following in all cases:

1. Thoroughly open the antrum and explore the mastoid cells.
2. Failing to find sufficient evidence to account for the symptoms, the wound in the skull should be enlarged, backward; expose the middle and posterior fossæ above and below the lateral sinus, which should be explored by means of hypodermic syringing, and sub-dural abscess looked for.
3. If clot is found in the sinus, the internal jugular should be tied, the sinus opened and thoroughly cleared of its contents.
4. If suspicion of cerebral or cerebellar abscess exist, exploratory puncture should be made and, if pus is found, evacuated.

The mere opening of the mastoid and cranial cavity is, if rightly performed, practically free of danger. Therefore both the aural and general surgeon should be ready to co-operate in these cases, and the proper measures undertaken—thereby saving the life of the patient, for if left alone the disease is sure to terminate fatally.

THE TREATMENT OF CHRONIC SUPPURATION OF THE MIDDLE EAR.*

BY SETH SCOTT BISHOP, M.D., LL.D.

Professor in the Post-Graduate Medical School and Hospital of Chicago; Professor of Diseases of the Nose, Throat and Ear, in the Illinois Medical College, etc.

The diversity of opinion relative to the advisability of irrigating the ear in suppurative conditions of the tympanic cavity, is something worthy of remark. Some very excellent otologists disapprove of the practice. With others it is the common practice to syringe suppurating ears with the solution of bichloride of mercury—1 to 5000—in the beginning of treatment, at least, and even during the course of treatment.

The best course to pursue is not a routine one, but combines the wet and dry methods, or alternates them. Often the desquamated epidermis and pus are inspissated and require the disintegrating action and friction of a warm injection to remove them, so that the diseased tissues beneath may be reached by the medicaments to be used. It may prove somewhat interesting to detail briefly the methods, both wet and dry, that have generally afforded the most satisfactory results, not only in my own practice, but in the hands of my clinical assistants, of whom there are nine, and whose experience is not inconsiderable.

Believing that the most thorough cleanliness is absolutely essential to a cure of suppurating ears, we begin the treatment by having them syringed with the sublimate solution as warm as can be borne with comfort, using at least a quart at a time with a continuous-flow syringe. The alpha, or some such syringe, affording good control over the pressure exerted, is given the preference.

Inflation is then practiced with antiseptic vapors like camphor-menthol in a 10 per cent. solution. The discharges that inflation may project into the meatus are then removed with cotton.

The next step is to fill the ear with warmed dioxide of hydrogen, or peroxide, as it is commonly called (H_2O_2). I have seen it claimed that warming this remedy would deprive it of its potency, but I have employed it in this manner for years without observing such a result.

*Original abstract by author of paper read by title at Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, April 8, 1897.

In a private letter from so eminent an authority as Charles Marchand, he says:

"I received a letter from Dr. J. F. Burkholder a few days ago, in which he says that you had an argument with some doctors who claimed that when hydrozone is heated at a temperature of 102 to 110° F., it loses its strength. This is perfectly absurd. When hydrozone is heated at that temperature in a glass container, it does not lose any of its strength, and that is the proper way to use it in case of mastoid abscess and suppurative conditions of the middle ear."

The dioxide is left in the ear as long as effervescence continues. This decomposes pus, liberates oxygen, destroys bacteria and effectually cleanses the cavity. Finally, the ear is thoroughly dried out with absorbent cotton on the holder, and dusted with aristol by means of the small powder-blower. The drying effect of boracic acid is often added to the aristol when the discharge does not diminish rapidly.

After a few treatments the dry method is resorted to, if the ear can be effectually cleansed without irrigation. In occasional cases, the discharge ceases after one or two such treatments, and the instances are not few in which a week or two of this method suffices to effect a cure. Of course, these are not complicated with the presence of granulations, caries or necrosis of the bone.

Nasophen is a remedy that has recently been the subject of our experimental use. In a series of cases in which I have tried it in comparison with aristol, the results have been favorable. Although I am not yet prepared to accord it an equal place with aristol in our work, I have used it sufficiently to demonstrate that it is a valuable addition to our small list of effective drying antiseptic powders.

When it is suspected that the discharges are retained in the attic, or in the mastoid antrum, especially when the perforation is too small to admit of free drainage, it should be enlarged. But there are frequent instances in which the discharge does not diminish after thorough efforts at cleansing, disinfecting and medicating. This failure may be owing to the impossibility of the means employed to remove all the retained secretions, and the consequent failure of the medicaments to reach the diseased surfaces to a large extent. In such cases the writer's ear aspirator should be employed to evacuate the middle ear and its accessory chambers of the discharges that have been held back. In many cases that have appeared to be intractable, the adoption of this method of aspiration has been followed by a rapid recovery.

Columbus Memorial Building.

THROMBOSIS OF THE LATERAL SINUS.*

BY B. F. CHURCH, M.D., DALLAS, TEXAS.

Text books on diseases of the ear singularly treat only of mastoid complications of middle ear diseases and leave further extensions of the infection from that locality, as thrombosis of the lateral and cerebral sinuses and brain abscess, to general surgery. As the sources of infection are almost without exception in the ear, their surgical treatment legitimately belongs to the aural and not to the general surgeon.

There is no history of the lateral sinus having been opened for the removal of inflammatory products, until the late period of 1884. The first successful case operated on was by Lane in 1889. This operation inaugurated a very important advancement in surgery and has deservedly become widespread and popular.

The gravity of the affection and extremely small chance for spontaneous recovery, demands our closest scrutiny to detect its presence. When diagnosed or suspected, no time should be lost in operating. From abnormal situations of the lateral sinus, or carelessness on the part of the operator, it has, on several occasions, been accidentally opened without fatal result. In suspected cases, the surgeon is entirely justified in making exploratory investigations by laying the sinus bare and introducing a sterilized hypodermic needle, to learn the character of the contents.

Many of the symptoms of thrombosis of lateral sinus are in common with abscess of the brain, as rapid pulse, stupor, vomiting, choked disc, persistent headache, etc., yet there are others which are almost pathognomonic and leave little room for doubt in diagnosis. In general, the symptoms may be said to be severe and persistent pain, which may be referred to the frontal or occipital regions, sudden rise and fall of temperature, going to 104° - 107° , severe chills of short duration and frequent repetition, tenderness on pressure over the internal jugular vein, œdema in the mastoid, temporal and zygomatic regions, without redness of the skin, etc. The most valuable diagnostic symptom of thrombosis of the lateral sinus is phlebitis of

* Read by title at the meeting of the Western Ophthalmological, Otological, Laryngological and Rhinological Association, held at St. Louis, April 8, 1897.

the internal jugular vein, which would feel hard and extremely sensitive to the touch, so much so that slight pressure may arouse the patient from a deep stupor. Sudden rise and fall of temperature is a characteristic symptom. Moos claims that œdema of the temporal region is a pathognomonic symptom of thrombosis of this sinus. The conjunctiva and eyelids are in most cases œdematous.

Pneumonia, due to pulmonary embolism or the extension of the clot to the lungs, is usually the cause of fatal termination.

Kærner has shown that the relative position of the lateral sinus varies greatly, according to the curve of the sigmoid flexure and the corresponding depth of the sulcus sigmoides which is greater, throwing the sinus closer to the external auditory meatus, in brachycephalous skulls (skulls in which the occipito-frontal and bi-parietal diameters are nearly equal) than in the opposite, dolichocephalous. The depth of the sulcus is not commensurate with the degree of brachycephalicy, however. He also found it greater on the right side than on the left. In normal skulls the situation of the anterior wall of the sinus is one-half an inch behind the center of the meatus. It sometimes, though rarely, lies so close to the auditory meatus as to preclude the ordinary mastoid operation without wounding it. The place for trephining in this locality is usually computed from Reid's base line, which is an imaginary line drawn through the center of the external auditory meatus to the lower margin of the orbit. A trephine centered one-fourth of an inch above this line and one inch behind the center of the meatus would open the lateral sinus.

These measurements are of little practical value, for the reason that when the operation is demanded, the source of infection is the tympanum, with usual involvement of the antrum and mastoid cells, and these cavities should always be opened and thoroughly cleansed of all inflammatory products before opening the sinus, which is then accomplished by extending the wound backwards by means of the chisel or Ronguer forceps. After exposing the sinus, if no manifest indication of a clot is seen, introduce a sterilized hypodermic needle to see if it contains fluid blood.

If a thrombus is found, as stated by Dr. Adams in Transactions of the American Otological Society, 1896, three operative methods are open to the surgeon: First, to simply ligate the jugular vein; second, to open the sinus and remove the thrombus with a curette; third, to combine these operations. Simple ligation of the jugular vein has not been done many times and does not seem to have been attended with as great success as the other two have been.

Most English writers favor ligating the internal jugular vein before

opening the sinus. Such a procedure is probably not necessary or advisable unless there is evidence that the clot is breaking down, or contains septic material. If the sinus is filled by a fibrinous clot, ligation is clearly not indicated; a thorough removal of the clot is all that is necessary.

The first step in the operation should be to thoroughly remove and asepticise all sources of infection in the middle ear, antrum and mastoid cells, before exposing the sinus. Then enlarge the wound backward and bring the sinus in full view for inspection. If the needle demonstrates a clot, lay the sinus open along the whole length of the skull wound, introduce a small curette, and remove all particles of clot that can be reached, compression, in the meanwhile, being made by an assistant over the jugular vein in the neck. If the clot is extensive, the wound should be extended with Ronguer forceps up towards the Torcular Herophili and the bulb of the jugular vein below, and curette again used with endeavors to cause fluid blood to flow. After all the clot is removed that is possible by use of the curette, the cavity should be syringed with a normal salt solution, and closely packed with iodoform gauze. If strict asepsis has been practiced, and no indications arise for its earlier removal, the dressing should not be disturbed for four or five days. When necessary to ligate the jugular vein, the best place is low down near the clavicle.

North Texas Bank Building.

Palliative Measure to be Used for the Dysphagia of Tubercular Laryngitis.

In order to relieve the dysphagia of tubercular laryngitis, when it has arrived at the stage of ulceration, the following is recommended: (Archiv. Int. de Lar. d'Otol. et de Rhin., Jan., Feb., 1896.)

Cocainæ Hydrochlor.....	25	ctgrms.
Morphinæ Hydrochlor.....	10	ctgrms.
Antipyrini	2	grms.
Aquæ laurocerasi, aquæ distill.....	50	grms..... M.
Sig. Three to four tablespoonfuls by atomizer during 24 hours.		

If it is found preferable to use a powder, the following may be used by means of Leffert's or other powder-blowers:

Hydrochlorate of morphine.....	2	ctgrms.
Sugar of Milk.....	4	ctgrms.
Gum Arabic.....	4	ctgrms..... M.
Sig. Use with powder-blower.		

W. S.

A CASE OF MASTOIDITIS WITH THROMBOSIS OF THE LATERAL SINUS.*

BY EWING W. DAY, A.M., M.D.

Otologist to the Eye and Ear Hospital, the Charity Hospital and the Children's Hospital, Pittsburgh, Pa.

Thrombosis of the sinus or jugular vein, as a complication to purulent otitis media, is always of interest to the otologist. The recovery of these cases are rare, except from the removal of the clot by a successful operation.

The case to which I wish briefly to call your attention is one in which nature successfully accomplished, with some timely assistance, what we failed to do by surgical interference.

On January 3d, I was asked by Dr. Edsall to examine a case under his care in the Children's Hospital. The history given was as follows: Mary F., age 8 years, was admitted to the hospital on Dec. 25, 1896. Since 4 years of age she had had a bilateral otitis media purulenta, the result of scarlet fever, in early November she was taken sick with "grip," and during this attack the discharge from her ears, the right one in particular, was re-established. Two weeks subsequent to her admittance to the ward, a swelling appeared in the neck upon the right side, a little below the jaw, and beneath the sterno-cleido-mastoid muscle, which in time encroached so much on the pharyngeal space as to cause severe dyspnoea and great difficulty in swallowing, but there was never any evidence of any special inflammatory condition. With the appearance of this swelling the patient's health declined, and the temperature excursions became greater, often reaching 105° , and there were several distinct attacks of convulsions. The swelling in the pharynx became so great that suffocation was feared, and her removal to the hospital advised. While being examined by the house physician, pressure was made over the swelling in the neck, which caused a rupture of the abscess in the pharynx, and a large amount of pus was discharged through the mouth and nostrils. This relieved, temporarily, the urgency of her symptoms, but she soon showed evi-

*Read before the American Laryngological, Rhinological and Otological Society, at its meeting in Washington, D. C., May 3d.

dence of profound toxemia. At the time I saw the case with Dr. Edsall the patient was emaciated, intensely prostrated, with marked dullness of the intellect, but no delirium. Pupils normal. Pulse about 130 and weak. Temperature during most of the day about $99\frac{1}{2}$, with a sharp rise to 104 or 105 degrees occurring each evening. The former swelling in the neck was at this time almost unnoticeable, but there was considerable induration over its site, which was mistaken for a thrombosis of the jugular. The right ear was discharging a large quantity of very offensive pus. There was no sagging of the roof of the external canal, nor swelling or redness over the mastoid process. Deep pressure failed to elicit any signs of tenderness. From the history given us, and from the patient's condition at this time, we were led to believe that the source of the trouble lay in the mastoid, although almost every symptom of this condition was wanting.

In opening the mastoid, an unusual amount of bleeding was present of a venous nature. The external table of the mastoid was hard and moderately thick. The interior was found in a necrotic condition, filled with pus, and necrosed bone. In the anterior part of the floor of the process a sinus was found leading downward beneath the sterno-mastoid muscle, through which a probe could be passed; thus explaining the origin of the abscess which had formed in the neck. From the amount of venous oozing, and other conditions, it was believed at this time that the lateral sinus and jugular vein must be involved.

The jugular vein was exposed with the intention of ligating it previous to exposing the sinus. While the carotid artery and sheath were easily found, the vein itself was found totally collapsed. The sinus, through which the abscess in the neck had ruptured into the pharynx was also discovered, and a probe could be passed along its course to the middle of the pharyngeal space and upwards towards the mastoid. At this point it was found necessary to abandon the operation on account of darkness, with the intention of exposing the sinus on the following day if the conditions seemed to justify it.

Following the opening of the mastoid there was a decided amelioration in the patient's symptoms, and further interference was delayed. For four days the temperature was only slightly above normal, the pulse and general conditions were markedly better, and larger quantities of nourishment assimilated, but on the 8th the former temperature cycle began again, going suddenly to 104 with increased prostration of the patient. It was then deemed advisable to expose the sinus in the hope of finding the thrombus. This was

done on Jan. 10th. The patient's condition at this time was even worse than at the first operation, and the ophthalmic examination of the eyes showed a beginning optic neuritis in the right eye. There was also a swollen condition of the right side of the neck which had developed since the first operation. The dressings removed from the mastoid were clean with no sign of pus. A curved flap was turned down over the course of the sinus, and the skull perforated at a point about an inch behind the external canal. The hemorrhage was very great, mostly of a venous nature. Every small capillary seemed to be converted into a large vessel. A scratch of the bone with a chisel would be followed by free oozing of blood. This bleeding was very difficult to control. When the lateral sinus was exposed, its walls protruded into the opening, and it was found to be very tense, though the pulsations could be easily felt, but it did not give the feel to the touch, as though obstructed by a clot or organized mass at this point, but pus was found overlying the dura. The sinus was uncovered in its course forward to the posterior wall of the mastoid, and a small opening discovered which led into the mastoid cell. The bone between the sinus and the posterior walls of the mastoid was cut away in the endeavor to reach the deeper portions of the sinus, at which point it was judged that the thrombus existed. The loss of blood up to this time had been very great. The patient was pulseless, and, apparently, dying; and further procedures had to be abandoned. The wound was hastily packed and dressed, restoratives administered. The patient was left on the table, in the full belief that recovery was impossible. For 24 hours it was uncertain whether or not the patient would rally from the shock. Reaction was slow and the anæmia from the operation was profound. The course of the case for the next 10 days was one of profound toxæmia, the temperature each day going to the neighborhood of 106° , accompanied by sudden drops, sometimes being subnormal, with the pulse almost imperceptible, and respiration very rapid and irregular. There was no distinct rigor preceding these attacks, and consciousness was not lost. Vomiting was absent, except on one occasion, the second evening after the lateral sinus was uncovered, and this was not severe.

Four days after the second operation the swelling in the neck had increased and was opened by Dr. Anderson. A pocket of considerable size was found deep under the sterno-mastoid and posterior to the digastric muscles. This contained a large, partly disintegrated clot of blood and pus. The blood clot showed all the signs of having been formed for a considerable length of time. The carotid

artery lay exposed at the bottom of this opening, with its sheath covered with granulations. A probe was passed well up to the region of the jugular foramen, and it in no way communicated with the sinus that was found when first the mastoid was opened. The cavity was washed out and drained. For the next eight days the temperature ranged from 98.8 to 106.2. Depression and anæmia remained profound and nutrition seemed to have failed utterly in spite of the fact that the patient took and retained considerable quantities of milk and seemed always hungry. On January 22d, the temperature came down to 100, and until February 2d ranged from there to 97.4. By the first week in February the patient seemed in a fair way to recover when a new complication developed. This time it was the lungs which were the seat of trouble. The temperature suddenly reached 103. There developed here a profuse expectoration, very disagreeable in odor, and the lower lobe of the right lung was found affected, caused without doubt by a septic infarction. Examination of the sputum for tubercular bacilli gave negative results, although staphylococci, in considerable numbers, were present. Repair of the opening in the mastoid bone was very slow in becoming established, and it was not until the pulmonary trouble had well subsided that active repair began. The pus pocket in the neck also began to fill up, granulating from the bottom, about the same time. From the latter part of February convalescence became practically uninterrupted, the only phenomenon of this period being the super-vention of pronounced bradycardia with interruption in the pulse on about every twentieth beat. This persisted, though in a somewhat less degree, up to the time of her discharge from the hospital.

The treatment used in the case, aside from operative measures, was free stimulation with whisky, combined with strychnia and digitalis. At the time the patient left the hospital, the last week in March, the opening in the bone and in the neck were both closed perfectly, there was no discharge from the ear on the affected side beyond a slight moisture, the cough was gone and she had gained several pounds in weight. She was able to be about and play with other children and was in all respects a healthy child. The vitality possessed by the little patient was truly remarkable. At the time of her entrance to the hospital one would have been justified in thinking that she would die from inanition, if from no other cause, yet she was able to pass successfully through two severe operations, attended with considerable loss of blood, and a third slight operation, endure a long period of pus absorption attended with extreme maximum of temperature each day, resist a pulmonary involvement

and yet convalesce in about three months. Much credit is due to Dr. Eicher, the interne at the hospital, for his resourceful management of the case in the many emergencies which arose during its progress.

The interesting points presented in this case are:

1st. A mastoiditis, unaccompanied by the usual symptoms of that disease.

2d. The perforation of the bone through to the digastric fossa, and the unusual course taken by the pus to the pharynx.

3d. The perforating of the posterior wall of the mastoid process, producing a localized meningitis and thrombosis, probably at the bulbus of the internal jugular.

4th. An obliterating phlebitis of the jugular vein, which to a great extent protected the lungs and other organs from infection.

5th. The breaking down of this thrombosis, and of the jugular, and the formation of the second abscess in the neck.

6th. A localized septic pneumonia, probably from an embolism carried by some collateral vein to the lungs.

7th. The ultimate recovery of the patient.

Westinghouse Building.

The Penetration of Foreign Bodies Into the Larynx of Aged People.

Dr. G. Ferreri states that the penetration of foreign bodies into the larynx of aged people is due to the following causes: (*Archiv. Ital. di Otol., Rinol., etc.*, No. 1, 1896.)

1. Absence of teeth; the alimentary bolus receives an insufficient mastication and retains an irregular form which is badly adapted to the arched form of the velum palati and the pharynx, and may thus fall into the larynx.

2. Diminution of the sensibility of the pharynx and the larynx. A lack of attention on the part of old persons may permit the fall of the bolus into the larynx without the patient noticing it. The cough, which in healthy persons at once demonstrates this accident, and which also serves to dispel the foreign body, is frequently absent in the case of old persons.

The author advises, in cases of foreign bodies in the larynx, the use of the endo-laryngeal method by means of forceps, when this can be done without too great damage to the tissues. In other cases, a laryngo fissure must be done. Tracheotomy is necessary when the foreign body is in the lower part of the larynx.

CLINICAL REPORTS.

DOUBLE MASTOID DISEASE, FOLLOWED BY ABSCESS OF THE SPHENO-MAXILLARY FOSSA AND NECK, WITH A REPORT OF A CASE—RECOVERY.*

BY J. O. STILLSON, A. M., M.D.

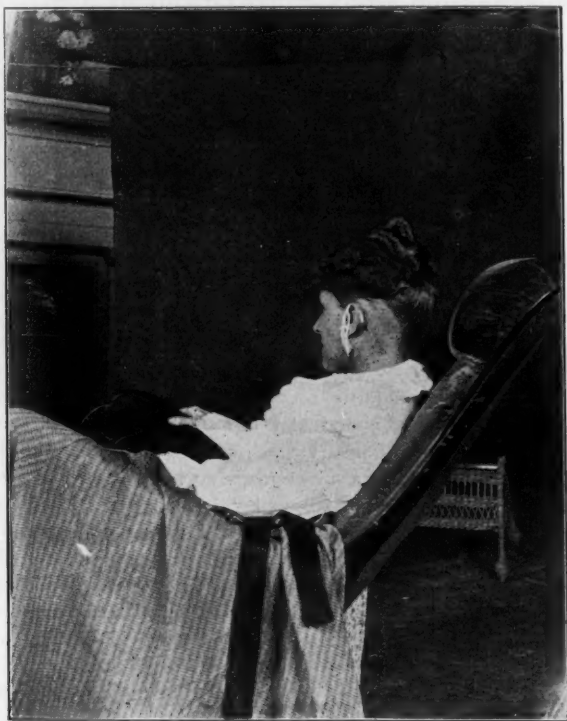
Ophthalmic Surgeon to the Indianapolis City Hospital and City Dispensary; Consulting Oculist and Aurist Protestant Deaconess' Hospital; late Physician to the Indiana Institution for the Blind; Member Indiana State Medical Society and Indianapolis Surgical Society; Member Indiana Academy of Science and American Society of Microscopy; Mississippi Valley Medical Association, Etc., Indianapolis, Indiana.

The question of operative interference in cases of acute middle ear inflammation, with mastoid infiltration and pus-building, is one of interest at all times to those who are familiar with this field.

Opinions are as yet somewhat divided, although the tendency is toward radical measures. There are those who still hold to conservative methods in the majority of cases, while others advocate early operations. Results of numerous reported cases, it seems, in the mind of the writer, will justify a departure from our former timid practice, to the adoption of a bolder procedure in many instances, much to the relief of the patient, and saving of time as well as the preservation of hearing, and even of life itself. The close proximity of the attic to the lower wall of the cerebral cavity, the position of the antrum with its floor so much below the level of the aditus, that pus will remain in its cavity for an indefinite period, the easy gravitation of pus from the cells of the mastoid into the antrum, the corresponding difficulty in the matter of adequate drainage through the tympanum, are or themselves, on physical grounds, arguments in favor of an early external opening. Added to this, the far more important reason of caries of the cells extending backwards toward the lateral sinus, and upwards into the middle cerebral fossa, enhances the benefits to be derived from early liberation of the pus by an opening; while it adds very greatly to the dangers caused by delay, and the unwarranted continuation of "dilly dally" methods, which, at best,

*Read before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, Mo., April 8th, 1897.

in the event of recovery, are almost sure to result in more or less pronounced deafness. Rules as to when to operate, and what class of cases to operate, would be valuable to us, if it were possible to always determine all the factors that go to make up the cases. These are, however, not easy of access. The one general proposition of surgery, that wherever there is pus it should be let out, should be our guide. Every case is a case of its own, and to this fact should be



coupled our judgment, in each individual instance, with a leaning rather towards earlier operation, than by delay allowing the patient to pass the border line of safety into the dangerous grounds of meningeal inflammation and sub-dural abscess.

The writer submits a report of the following case as illustrating the position, which he now holds, after some twenty years of practice, during which time he had leaned to conservative methods and

operated in many cases reluctantly after he had found milder methods inadequate or dangerous:

Mrs. W., wife of a physician, a lady of middle age, with no tuberculous history, having always enjoyed fair health, was seized with a severe attack of influenza in February, 1896. The attack lasted several weeks, during which time ordinary methods were employed by her husband. The nasal passages had been sprayed out from time to time, and general treatment kept up, the details of which were not inquired into. Suffice to say, that on March 10th, 1896, whether from the spraying or from the renewed onset of the inflammation, it is difficult to say, both middle ears filled up with exudate; hearing ceased, pain followed, with increase of temperature, and the writer was asked to see the case. Status praesens: Membrana tympani both red and bulging, umbo obliterated on both sides, malleus handle apparently depressed lying in a groove caused by the outward displacement of the membranes; pain unbearable, no discharge. Hot fomentations had been in use about forty-eight hours. After syringing out the ears with hot borax water, a free paracentesis was made on both sides, which was followed by the escape of a moderate, sero-sanguineous exudate. Leeches were then ordered to be applied to both sides, to be followed by hot douches and the cautious administration of hypodermics.

In the right ear the effect was all that could be desired, while the progress was slow, and the mastoid was very tender, and at frequent intervals during the next few weeks became threatening; the discharge was kept up until such a time as catheterization could be occasionally done, which was followed by an uneventful recovery.

The left side, however, did not behave so well. The alleviation was only temporary. The bodily temperature arose to 103, pain continued and spread over the temporal, mastoid and occipital regions, with cessation of the discharge, and it was found inadvisable to allow prolonged use of morphia, which only produced fitful snatches of rest, to be followed by beginning signs of delirium, so that on the fourth day (March 13th) the left mastoid was opened, under ether anaesthesia. A large incision was made, drill, curette and chisel, until the whole external wall over the antrum was removed, and cautiously continuing the operation, communication was established with the attic, and another free incision was made in drum membrane behind the malleus handle.

A marked period of relief followed this operation, so that bright prospects for an early recovery were in view. But this was only to last about three or four days. On the 16th there was much pain and

an increase of temperature, but no delirium. The seat of pain was now transferred to the zygomatic and upper maxillary regions. Trans-illumination, through the mouth and posterior nares, revealed pus in the antrum of Highmore on the left side. Accordingly, under nitrous oxide gas anæsthesia, the second bicuspid tooth of the upper jaw was removed and with a dental engine and drill an opening was made into the antrum of Highmore, from which the pus escaped in liberal quantities. Progress was now very much advanced, although the patient was emaciated and weak from suffering and poor digestion, until the end of the fourth week from this operation, when another relapse occurred. About this time the discharge in the left ear had ceased, the mastoid opening had filled with granulations, and yet there was much pain and a return of the temperature. The maxillary antrum had been kept clean, as well as the mastoid opening, and the former had continued to discharge. The catheter could be introduced and the drums of both sides inflated, and the hearing was becoming nearly normal again. But on the 10th of April great tenderness and swelling began behind the ramus of the jaw, and all along the anterior border of the sterno-cleido-mastoid muscle. This progressed so rapidly that on the 15th the temperature again rose to 103. Short, broken, wheezy, almost emphysematous respiration appeared and septic pneumonia was feared. Deep down under the sterno-cleido-mastoid muscle fluctuation could, with difficulty, be made out. Accordingly, under ether anæsthesia, a careful dissection was made. The incision extended from the mastoid process, along the border of the sterno-cleido-mastoid muscle about half its length to a point on a line with the level of the thyroid cartilage. The external jugular vein was crossed, not divided but held back and out of harms' way with the retractor. The upper border of the platysma-myoides was cut through where it overlies the sterno-cleido-mastoid. The infra-maxillary branch of the cervico-facial nerve being exposed somewhat diagonally across the wound, it was retracted with a hook, and drawn out of the way. From that point the dissection was continued with the fingers and the handle of the scalpel. A large pus cavity was found just above the neighborhood of the digastric muscle. This was washed out and a drainage tube passed in at the lower end of the opening and brought out at the upper opening immediately behind the mastoid process. Free drainage was now well secured; and from this time on to the close of the case nothing eventful occurred. The daily reports were better, and at the end of six weeks more, recovery was complete.

In this case good hearing was obtained in both ears, and the lady's health now, a year after her experience, is said to be perfect.

The accompanying illustration shows a catgut ligature in the sight of the wound some weeks before the recovery was complete.

A CASE OF INFLAMMATORY GLAUCOMA OF REFLEX NASAL ORIGIN.*

BY J. ALOYSIUS MULLEN, M.D., HOUSTON, TEX.

Mrs. M. P., white, aged 45 years; weight, 190 lbs.; mother of three children. At the birth of the last child, seven years ago, she had an attack of phlegmasia alba dolens in both extremities.

Several hours before parturition she experienced sudden, intense pain, confined to the right eye; the life of the ophthalmalgia she could not recall; it ended, however, soon after the birth of the child.

After convalescence she observed ptosis of the right upper lid and external squint of the right eye.

Three months previous to consultation she had a return of pain in the right eye similar (?) to the attack some years before.

The pain gradually extended to the right temple and involved the vertex and occiput; *not localized* as in the former attack.

She applied to an ophthalmologist for relief of pain. An iridectomy was attempted unsuccessfully.

The pain increased after the operative interference, but the diplopia had entirely disappeared.

When first seen, the eye presented the following conditions:

Pupil widely dilated, oval in shape, the long axis of the oval vertical. Iris held down by complete posterior synechia, anterior chamber shallow. Tension plus. Lense rapidly undergoing opacification. Ptosis of upper right lid and external squint of same eye.

Projection and perception of light good.

Examination of the right nasal chamber showed occlusion of the middle and superior meatii, due to enlarged middle turbinate. Pain relieved by cocaine applied to hypertrophy.

The enlargement was almost cartilaginous in structure; its removal easily accomplished.

The ablation of the growth permanently and completely stopped the painful seizures. Normal tension returned. Anterior chamber not quite so shallow. Urine negative.

602 Main St.

*Read before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, April 8th, 1897.

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EDITORIAL.

GRAINS OF EXPERIENCE.

The present era has been truly termed The Mechanical Age, and even in medical and surgical progress we find this appellation often in practical usage.

The aurist and laryngologist of to-day, be he ever so advanced in methods of diagnosis and therapy, if lacking in skillfulness in the manipulations of his instruments and apparatuses, meets with a very formidable obstacle to success in his practice.

The application of the galvano-cautery in the hands of an ex-

perienced operator is a simple procedure, and yet even he must needs exercise a constant care, so that in the removal of the heated wire from the field of operation he does not touch the healthy tissues about the alæ nasi. The result of so slight an accident is scarcely of surgical significance, still it is always a pain in some degree to the patient.

Again, it is self-evident that the hand of the operating aurist and aryngologist should be steady. Here, at any rate, the protest entered against the indiscriminate use of the cigarette, and the constant jarring of the hands that grip the handle-bar of the bicycle as it rattles over the granite pavements, is reasonable and valid.

The areas of the aural canal, of the nasal meati and the laryngeal spaces, are so limited that even with a steady hand application to these parts is not always an easy task.

Then, too, there are little points in the treatment of our patients which require frequent consideration.

If an unruly child or even adult is in the chair for the removal of a foreign body from the ear, where the manipulation of probe, hook or forceps becomes a necessity, the precaution of fixing the head of the patient is never to be overlooked. If, when a sudden jar or pain is felt, the head is suddenly jerked *toward* the operator instead of *from* him, it requires much manual dexterity to prevent a damage by the instrument to the delicate tissues of the ear or even the perforation of the drum.

We are apt to be indifferent to the comforts of our patients even in so small a matter as the spraying of the nasal or pharyngeal cavities, where the solutions reach the delicate mucous membrane *cold* instead of *warm*. The emersion of our spray-tube in a little hot water overcomes this difficulty to a nicety and adds to the comfort of our patient.

Cleanliness is a factor which is highly appreciated by the majority of our patients. A clean napkin, a polished tongue-depressor, a speculum free from the secretions gathered from a previous patient's aural or nasal canal, a head-mirror which is not speckled with the dust of ages, a cuspidor which looks inviting—these are the little things which often contribute largely to our popularity or success.

"Put yourself in his place" is an axiom which may be well applied to the physician in his relation to his patients.

It may often prove a valuable lesson to practice these little discomforts on ourselves and experience the many sensations, other than delightful, which they frequently produce.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

SESSION, THURSDAY, MAY 6th, 1897.

[PROCEEDINGS CONTINUED.]

Simulated Sarcoma of the Tonsil, with Case. By Dr. D. Bryson Delavan, New York.

Dr. Delavan reported a case which is interesting as exemplifying the difficulty of making a diagnosis of malignant disease in this region. The patient asked the removal of a growth in the left tonsil. There was no history of syphilis. Two months before, the tonsil had been inflamed and enlarged, and had finally broken down, one-half of the tonsil being involved. The remnant of the tonsil was indurated, and several cervical glands were enlarged. The patient complained of some pain. The disease showed the clinical appearance of sarcoma.

The fragment was removed and sent to the pathologist, who was at first in doubt and then stated the probability of sarcoma. The entire tonsil was then removed, and again referred to several pathologists, who all reported sarcoma, with the exception of Dr. Hodenpyl. This pathologist stated that the resemblance to sarcoma was striking, but he felt compelled to exclude it on account of the normal size of the tonsil. The accuracy of this report was substantiated when the patient recovered under iodine treatment.

The Reduction of Hypertrophic Rhinitis by Submucous Incision.

By Dr. D. Bryson Delavan, of New York.

The reduction of enlarged turbinals by means of the snare or caustics is not conservative, as the mucous membrane is destroyed, and the application is usually ineffective. The swelling may not be due to hypertrophy, but to congestion of the corpora cavernosa. The first object is to reduce the congestion so that nasal breathing may be resumed.

One year ago, he first tried the method of submucous incision, the object being to obliterate some of the blood vessels and reduce the mass in this manner. For this purpose, he prefers the small knife

used by ophthalmic surgeons. After cocaine, the point of the knife is passed obliquely as far as possible, and, with a slight, sweeping movement, brought out of the same opening. It is better to repeat this maneuver than to try to accomplish too much at one time. There is little pain or hemorrhage from this operation. It is advisable to keep the parts contracted by means of cocaine for several hours after the incision has been made. Relief is usually prompt, and his cases have all, so far, been without unpleasant results. It is easily applied and causes little irritation.

He does not claim originality for this method, but is interested in knowing if it could be productive of untoward results. He illustrates the advantages of this operation by the report of a case, which had been treated without effect for nasal reflex, which was promptly relieved by this method.

Discussion.—Dr. Wright stated that this method seems to be a valuable suggestion. It breaks up the coats of blood vessels, as in aneurism. As regards the length of time that this operation would give relief, it must be remembered that congestion of the turbinal is frequently secondary to other conditions. It cannot be radically cured, therefore, unless the existing causes have been removed. A recurrence is, therefore, no argument against the advantage of this operation.

Dr. Casselberry stated that this treatment appears useful as a temporary expedient in congestion of the anterior or middle part of the turbinal, but in many of these cases, the pathological condition is in the posterior part, which is difficult to reach by this method.

Dr. Norval Pierce, of Chicago, has suggested a somewhat similar method with the addition of applying a small bead of chromic acid, after the opening into the turbinal has been made. Dr. Delavan's paper on sarcoma is a very good lesson. In a case in Dr. Casselberry's practice, a piece of glandular cyst of the larynx was submitted to a pathologist, who reported cystic sarcoma. Dr. Casselberry, thereupon, commenced extensive cauterization to extirpate the growth. A recurrence did not take place. Had this diagnosis been made correctly, the repeated cauterization could have been avoided.

Dr. Wright stated that there is no insurmountable difficulty in distinguishing between a malignant and a non-malignant growth, but the trouble is that most pathologists have no clinical experience. It is important that the pathologist should be made acquainted with all the clinical points of the case, which might prove of value in making his diagnosis.

Dr. Casselberry.—In the cases in which there is a discrepancy be-

tween the report of the pathologist and the clinical appearance, they should always be regarded with suspicion.

Dr. Delavan, in concluding the discussion, stated that it is important to use the iodine test in these cases, and to send as much of the growth as possible so as to aid the pathologist in his diagnosis. His patient had been prepared for an important operation, which had been prevented only by the report of Dr. Hodenpyl.

In regard to the operation on the turbinal, which he had suggested, it is a conservative method, as the mucous membrane is not destroyed, and good results are obtained.

A Case of Subglottic Tumor, Causing Great Dyspnoea: Removal by Tracheotomy and Curetting. By Dr. J. W. Farlow, of Boston.

Dr. Farlow reported a case of a woman who had suffered from difficult breathing. She had previously had an operation performed for nasal stenosis from septal obstruction. The physician had afterwards found two subglottic growths, for which he had operated externally on account of the dyspnoea which they caused. A radical operation had not been performed because the growth was supposed to have invaded the oesophagus. Under iodine, the patient became gradually worse.

The case came under Dr. Farlow's observation last January. She has lost 30 pounds; the dyspnoea was marked, although there was no pain. The nasal bone and the lateral cartilages were markedly thickened, which interfered with respiration. The space below the vocal chords was filled with a smooth swelling, appearing to proceed from the posterior part of the trachea, and leaving only a narrow chink for respiration. The cords moved freely, causing the voice to be but little affected. There was no ulceration, pain, or difficulty in swallowing. He did not consider the growth malignant, but more probably an enchondroma of the posterior wall of the trachea.

A low tracheotomy was performed, and the tracheal opening extended nearly to the cricoid cartilage. It was found that the growth originated below the cricoid cartilage and extended downward. The first object was to relieve the dyspnoea, and not to remove the whole mass. The tumor was firm, and it was scraped with a sharp curette, leaving the trachea apparently free. The wound was sutured, and five days later the tracheal tube was removed. The examination showed fibroma.

Enchondromata in this region are rare, there being only two cases recorded. This had been suspected on account of the appearance of the cartilages of the nose. A recurrence is probable, as, undoubt-

edly, some of the growth was left. It was not vascular, and the firmness suggested fibro-cartilage.

Papillary Edematous Nasal Polypi and their Relation to Adenomata. By Dr. Jonathan Wright, of Brooklyn.

Dr. Wright read an interesting article on this subject, and supported his statements by a number of cases reported in literature, and some in his own experience. He has already called attention to the fact that true myxomata are never found in the nasal chambers, and that the growths usually called by this name are simply the result of chronic inflammation.

Adeno-Sarcoma of the Nose. By Dr. F. E. Hopkins, of Springfield.

Dr. Hopkins reported a case of a patient of 83 years, who had had relatively good health, and there was no history of cancer or tuberculosis in his family. Since six years there had been an obstruction of the left nostril and free discharge of mucous. The physician, to whom he applied, had torn something from his nostril with forceps, but this did not give relief, and a month later, there was a severe epistaxis and afterwards a second hemorrhage.

When the patient came under observation, there was no pain or epistaxis, the patient complaining only of the discharge and obstruction. The left eye had been somewhat displaced outwards. The septum was pushed to the right, the left nostril being filled with the tumor as far as the vestibule and the choanæ. There was no involvement of the glands. The histological examination made by Dr. Wright gave a report of adeno-sarcoma. These cases are rare. There may be more cases in the future if more careful observations are made.

Dr. Geo. A. Leland, of Boston, reported a case in which there was a gradual obstruction of breathing with recurrent epistaxis. Three months before, some of the obstruction had been removed. On examination, the nasal bone appeared to be raised and loosened by the pressure of the growth, and the right eye appeared to be pushed out. The right nostril was filled with a polypoid-looking growth, which bled easily. The clinical appearance suggested sarcoma. The growth rapidly increased and soon there was a sanious discharge from the lachrymal region.

The tumor, which was supposed to have originated from the ethmoidal region, filled the whole nares. A similar growth developed in the pleura resulting from metastasis of the original growth. Microscopic section showed the tumor to be adenoma with a tendency to sarcoma.

DISCUSSION.

Dr. Swain called attention to the analogy between polypi of the ear and nasal polypi. In aural polypi, the connective tissue aids largely in the production of the growth.

Dr. Wright stated, in regard to aural polypi, that a large proportion present this adenomatous condition. In regard to the change from innocent to malignant growths, pathologists are arriving at the belief that there are certain bacterial bodies in the cells, which are causative factors of malignancy, and that such growths are simply good culture grounds for the organism.

A Contribution to Laryngeal Phthisis. By Dr. T. M. Murray, of Washington, D. C.

Dr. Murray stated that the literature of this subject gives evidence that there is value in surgical interference in this disease. The usefulness of the curette is generally conceded. Spontaneous cure is also not impossible.

Many advocate the internal administration of creosote, but Dr. Størk has shown that it is dangerous on account of its effect on the stomach, thus interfering with nutrition. Dr. Murray, however, thinks its use advisable. The curette and lactic acid hold the first place in the surgical treatment. Laryngotomy and laryngectomy are advantageous only in exceptional cases. Of five cases successfully treated with the curette, one was still living six years later. Enzymol seems to have good effects in these cases, and he has recently used it successfully in a large ulcer.

Dr. Newcomb stated that he had frequently used creosote and he found that 35 drops per day could usually be tolerated.

Primary Lupus of the Larynx. By Dr. Emil Mayer, of New York.

Dr. Mayer gave the history of a case which came under treatment July, 1896. A year previously, following a slight cough, the patient had expectorated a wine glass of blood. This hemorrhage occurred daily, and always about the same amount. The hemorrhage then disappeared and the patient complained of no cough or pain. The edge of the epiglottis was ulcerated, tumefied and covered with nodules. There was no history of syphilis. There was a slight consolidation in the apex of the right lung. A diagnosis of lupus was made.

Under treatment, the hemorrhage ceased, the weight increased, and 18 months later, the patient appeared well, the voice and the appetite being restored. The epiglottis was thickened.

The second case has already been reported by Dr. Asch. Two years afterward, only a cicatricial flattening of the epiglottis remained.

The larynx is not as frequently affected as the skin; the larynx should always be examined in these cases. Secondary lupus of the larynx is rare, but primary lupus of the larynx is exceedingly so, but it undoubtedly exists. The tubercular nature of lupus has been so fully established that it requires no further debate. Why its manifestations are so different from ordinary tuberculosis, it is impossible to explain. The peculiar feature of lupus is the small number of bacilli, these being frequently found only after persistent search. It affects the epiglottis by preference, the ulceration causing a worm-eaten appearance, and showing a dead white color on healing. Stenosis is rare from the amount of lupoid tissue or from contraction.

In the early stages, the diagnosis is easy, but later more difficult; the glands may or may not be involved. The course is chronic, but sometimes spontaneous cure takes place. The differential diagnosis may be made from laryngeal tuberculosis by the husky voice, which is not present in lupus. Pain is usually present in tubercular laryngitis, but not so in lupus. In the latter, there is but little cough or expectoration, and but few bacilli. In the former, there is œdema, which is slight in lupus. There is ulceration in tubercular laryngitis, while cicatrices are more frequent in lupus. Lupus differs from syphilitic ulcerations in the clinical appearance, the history, and the fact that lupus becomes worse under iodine. In sarcoma the pain is a conspicuous factor; leprosy in this region is not met with in this country.

The prognosis of lupus is favorable. Surgical measures may arrest or cure the disease. A correct diagnosis is very important. The prognosis as regards life is reasonably good.

DISCUSSION

Dr. Swain referred to a case of lupus of the nose, in which the alæ had been destroyed. The cicatrices could be seen extending from the back of the palate and the right side of the tonsil to the base of the tongue and leading to the epiglottis. Cicatrices were also present in the larynx. The patient, nevertheless, had a good strong voice, and had never complained of sore throat. Tuberculine had been used in this case without success. After each injection, there was a reaction, but no good effects were accomplished.

Dr. Hubbard reported a case in which the only lesion was the destruction of the epiglottis with resulting contraction. There was a tubercular history, however, there having been a tubercular ulcer three years before; the lung was not involved.

Dr. Wright stated that we cannot separate lupus and laryngeal

tuberculosis clinically any more than we can microscopically. While laryngeal tuberculosis is usually typical, there are some cases which are difficult to differentiate.

He related a case in which the patient complained of sore throat, cough and hoarseness, with loss of weight. There was no history of syphilis. On examination, the larynx showed a granular appearance with so much infiltration that there was great dyspnoea. In the lungs there was a slight consolidation in the left apex. The case suggested lupus.

With some hesitation he prescribed iodine, which resulted in complete clearing of the larynx. There were tubercle bacilli in the sputum, however, and the case later developed general tuberculosis. Dr. Wright has little faith in the theory of mixed infection, although syphilis may be a predisposing cause.

Dr. J. H. Lowman reported a case, in this connection, which had been diagnosed as syphilis, but which he believed to be lupus. Under specific treatment the patient became worse but improved under Fowler's solution.

Dr. Mayer, in concluding the discussion, desired to know whether, in Dr. Swain's case, the eruption in the nose was secondary to lupus of the face. (Dr. Swain answered in the affirmative.)

While lupus and tubercular laryngitis may be histologically of the same origin, they are clinically different, and also differ in their prognosis. In the latter form, the prognosis is usually fatal, which is not the case in the former. In lupus we also have cicatricial bands, which are not met with in tuberculosis. In the case which he had reported, the destruction was enormous, but the voice was still unaffected.

Four Cases of Sarcoma of the Nasal Cavities. By Dr. J. E. H. Nichols, of New York.

In the first case, the sarcomatous growth was removed by means of the galvano-cautery snare. A recurrence took place and a more radical operation was undertaken, the nose being split in the median line and the flaps laid on the face; the growth was removed by means of the chisel, scoop and the curette. The ethmoidal cells and the sphenoidal sinuses, being also involved, were scraped. A recurrence took place and a more radical operation undertaken, including the removal of the eye. Four months later there was again recurrence. Antitoxin injection was made without result, and four months later the case had a fatal termination.

In the second case, there was exophthalmos and sarcoma of the left nostril. A radical operation was undertaken; a large mass was

removed and the cavity curetted. The case eventually proved fatal.

The third case was that of a boy, who was found to have a large mass in the right nostril, the right eye protruding. The mass filled the whole nostril and the naso-pharynx. Examination showed round-celled sarcoma. An operation was refused.

The fourth case was a patient of 17 years, who had had an obstruction of the left nostril for one year, which was found to be due to sarcoma. A radical operation was performed, and the whole nasal cavity, antrum and ethmoidal cells, were immersed into one cavity. Twenty-one months later there was a recurrence, which proved fatal.

OFFICERS.

The following officers were elected: President, Dr. Thomas R. French, Brooklyn; Vice-Presidents, Dr. T. Morris Murray, Washington, and Dr. H. S. Birkett, Montreal; Secretary and Treasurer, Dr. Henry L. Swain, New Haven; Librarian, Dr. J. H. Bryan, Washington, D. C. Council, Drs. D. Bryson Delavan, New York; John O. Roe, Rochester; W. H. Daly, Pittsburg, and Chas. H. Knight, New York.

Nasal and Mouth-Breathing. Dr. R. W. Miller. (*Southern California Practitioner*, May, 1897.)

The author of this paper details the experiments which have demonstrated that nasal-breathing warms, moistens and filters the air inspired. He then points out the responsibility of the general practitioner intrusted with the care of children in discovering the existence of habitual mouth-breathing, and seeing that it is speedily relieved, and thus prevent lasting impairment of other functions than those of breathing and hearing, and often much more important.

F. B. E.

International Congress, Laryngological Section.

At a special meeting of "The Oto-Rhino-Laryngological Society, of Moscow," held on the 21st day of June, 1897, it was decided that a "bureau" should be instituted for the convenience of members of Section XII, of the 12th International Medical Congress (Otolological and Rhino-Laryngological Section).

The object of this bureau will be to give all information needed, not only as to matters concerning the Congress, but as to all other matters where our visitors may require assistance or information.

This reference bureau will be open from 7 to 9 p. m., from the 13th to the 19th day of August, in the Doctors' Club (Bolshaya Dmitroffka), and during the meetings in the room of Section XII b. (Laryngo-Rhinology).

I. N. SCOTT, *President*.

WESTERN OPHTHALMOLOGICAL, OTOLOGICAL, LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

[PROCEEDINGS CONTINUED.]

Second annual meeting held at St. Louis, April 8th and 9th, 1897.

"Epithelioma of the Nose."

Dr. H. W. Loeb, St. Louis, exhibited a patient who had undergone three operations, by Dr. A. C. Bernays, for an extensive epithelioma of the nose.

The point of interest was the direct inspection of the openings of the Eustachian tubes, the salpingo-pharyngeal and salpingo-palatal folds.

"The Function of the Stapedius and Tensor Tympani Muscles."

Dr. Thos. F. Rumbold, St. Louis, read a paper on the above subject. This paper will be published in the September issue of THE LARYNGOSCOPE.

Dr. Goldstein said that he wished to be among the first to congratulate Dr. Rumbold on the originality of many of the points in his paper. Sound is the result of motion, and there is no doubt that tinnitus aurium is sound; hence, tinnitus aurium is the result of motion. The doctor fully concurred in the view that the Eustachian tube was normally closed. The method of differentiation between vascular and muscular tinnitus aurium is entirely original, and the points made deserve the careful consideration of the profession.

Dr. F. B. Tiffany, Kansas City, said that he believed the Eustachian tube was normally open, while one of the functions of the tensor tympani and stapedius may be to amplify sound, he did not think they produced tinnitus aurium, as tinnitus aurium was sometimes present even when the ossicles had been removed.

Dr. George Knapp, Vincennes, Ind., asked why it was quinine sometimes causes tinnitus. The doctor related the history of a case that he had seen in Prof. Politzer's clinic in 1895, who was so greatly annoyed by tinnitus aurium that the professor performed a tenotomy of the tympanum without any beneficial results; later the ossicles,

including the stapes and stapedius, were removed and the tinnitus increased instead of decreased. Prof. Urbantschitsch also performed tenotomy on the tensor tympani without any beneficial results.

Dr. Rumbold asked Dr. Knapp what kind of tinnitus these patients had and as to the character of the noises.

Dr. Knapp stated, that the first case was that of the escape of steam; that the second was a "running" noise.

Dr. Rumbold, in reply to Dr. Knapp's criticism, said: that the removal of the membrana tympani could not decrease the tinnitus in the cases mentioned, because this noise was due to vascular caliber irregularity. How can this irregularity of caliber be influenced in the least by drum-head removal, or the removal of the ossicula auditus? Had Dr. Politzer made a differential diagnosis he would not have expected to cause the return of regularity of irregular calibered blood vessels, consequently he would not have expected to have cured his case. Dr. Knapp says that the noise in the ear resembled "the escape of steam," and in the other "a running noise;" this only proves that the noise in the ear was *vascular* and not *muscular*.

He stated that if you have an irregular caliber of the blood vessels in the internal ear, or in its neighborhood, there must be motion of the vessels by the blood in passing through this irregularity, consequently, there must be a sound, and this sound almost invariably resembles the escape of steam, or the rush or running of water. It will *never* resemble a familiar sound—as he has called it, because he can get no better name—such as the sound of a grasshopper, or the tick of a clock, or a cricket sound. These ear-sounds are not and *can not* be formed by the same kind of action that forms the hissing sound of steam, the vascular sound. The doctor repeated that there is one kind of ear-sound due to muscular action, such as a paralysis agitans, and another due to the passage of the blood through abnormal blood vessels, and gave the means of forming a differential diagnosis.

As to the tinnitus occasioned by an over-dose of quinine, he said that quinine produces a trembling of *every muscle* of the body, and that the tensor tympani and stapedius is also sufficiently affected to cause an ear-sound. He had taken an excessive dose of quinine, nearly two drachms; the result was that he trembled and shook like one in a very severe chill for about two hours. He could with great difficulty here common conversation for two days.

"Advanced Method in Teaching the Deaf."

Dr. M. A. Goldstein, St. Louis, read a paper on "Advanced Method in Teaching the Deaf," and supplemented the paper by an

interesting, practical demonstration of the method on four pupils of the Sisters of St. Joseph School for the Deaf. (See page 349, *THE LARYNGOSCOPE*, June, 1897.)

Dr. Goldstein said he took pleasure in presenting these four young girls as representatives of the class to which he has devoted two years' time in applying this system of aural training.

Case I. D. A. C., aged 14. Lost hearing when two years old; cause unknown; no parental consanguinity; no deaf relatives. "When she was first presented to me for examination, the tests indicated an intense nerve deafness; not even the clapping of the hands, or the sounds of the voice or various instruments at close range were apparent to her. The exercises were begun as described. For five weeks there was no response; the pupil went through the exercises with the Sisters or with me daily. During the sixth week the young girl gave the first response, claiming to hear an indefinite sound. It was three weeks longer before she could differentiate vowel sounds, A from O."

(The doctor here demonstrated the method of calling the various sounds in the ear of the pupil.)

Case II. "This little girl has been deaf since she was three months old. When she entered the class she could hear loud hand-clapping and a very loud call at close range. Let me show you the results of our training." (Demonstration.)

Case III. V. P., aged 11 years. "Deaf since two years of age; cause of deafness unknown. She repeated a few familiar words, such as *mamma*, *papa*, *baby*, etc., when first taken in charge. She now hears almost any easily-sounded word of several syllables, and can repeat phrases and short sentences." (Demonstration.)

Case IV. F. McF., aged 17 years. "Congenital deafness; has two brothers, totally deaf; articulates poorly; tonsillar hypertrophy, faucial and pharyngeal, which, perhaps, aggravates the trouble. However, as there is parental consanguinity, and there are two deaf-mute brothers, we could hardly attribute the cause of the deafness to the tonsillar trouble. This girl heard the clapping of hands; she heard her name, *Fannie*, and a limited number of sounds and noises at close range. She now carries on a limited, intelligent conversation at ten feet range." (Demonstration.)

Dr. Tiffany: "Have any of these patients any disease of the middle ear, or trouble of the *membrana tympani*?"

Dr. Goldstein: "Yes, and I have no doubt that even greater improvement would be observed, if these conditions received careful attention. However, I wanted to satisfy myself as to the value of

this method, so I have attempted no treatment, instrumental or therapeutical."

Dr. Bulson: "Do you ever use an ear trumpet?"

Dr. Goldstein: "That is painful to many of the pupils. Sound transmitted in this manner comes with too much intensity, and easily pains, as most deaf-mutes have a very sensitive, hyperæsthetic condition of the ear."

"To spare the voice, however, I have had an accordion constructed, like that used by Urbantschitsch, supplied with an entire scale of four octaves of single reeds. With this musical instrument I can practice my pupils in pitch and intensity of sound very satisfactorily. Thus, pupils who began with a perception of perhaps only two or three tones, in the course of practice can be educated to differentiate the tones or notes of one or more octaves."

Dr. Dayton: "Have you ever tried the phonograph?"

Dr. Goldstein: No. "I might add here that I am now on the eve of adopting a specially constructed telephone, with a delicate transmitter. With such an apparatus, and proper connecting wires, I can instruct several pupils at the same time, each pupil holding a receiver of his own."

Dr. Suker: "Do you make them associate the sound of the words with the objects designated?"

Dr. Goldstein: "They are taught this in the regular work."

Dr. Fryer: "How often do you go over the same exercise at each sitting?"

Dr. Goldstein: "I take the precaution not to overtax either their patience or the strength of their sensitive auditory apparatus. Usually five minutes is an average drill, and I repeat the same vowels and words over and over again until they can hear them accurately and their responses come quickly."

"In conclusion, I would like to urge upon you, gentlemen, the practical advantages offered by this system. Many of you are connected with institutions for the instruction of the deaf and dumb, and I earnestly hope you will seek an early opportunity to give this system a practical trial, even if only on a few selected cases."

"Hypertrophied Rhinitis."

Dr. W. T. Grove, Eureka, Kas., read a paper on "Hypertrophied Rhinitis."

"Experiments on the Eustachian Tube by Means of the Tongue Thrust into the Naso-Pharynx."

Dr. Hamilton Stillson, Seattle, Wash., read a paper on "Experiments on the Eustachian Tube by means of the Tongue Thrust

into the Naso-Pharynx." See page 38, July issue of THE LARYNGOSCOPE.

The doctor demonstrated his method. Dr. Thos. F. Rumbold complimented the author on his investigation, and stated that ever since 1854, forty-three years, he had been disputing and combating the theory that the Eustachian tube was normally open or was open during the act of deglutition. In 1868 and 1872 and several later dates, he had published articles on this subject.

Epistaxis and its Management. By Dr. S. Trask. (Read before the Medical Society of the State of California, 1897. *Pacific Medical Journal*, July, 1897.)

The writer regards as the most frequent site a point on the septum, generally quite anteriorly, just below and in front of the tubercle of Creswell-Baber. That is, at the point of union of the spheno-palatine with the inferior artery of the septum. Silver nitrate, fused on a probe, lightly applied to the bleeding surface is recommended, and if it fails, sub-sulphate of iron, finely pulverized and rubbed into the mesh of antiseptic gauze, cut into narrow strips, and one or more of these pieces carried to the bleeding point.

A still more effectual remedy in the writer's hands is the stronger nitric acid. He chooses, if possible, a moment when the bleeding has temporarily ceased, washes the blood away with a fine spray of 1 per cent. sol. of cocaine, and packs about the bleeding point pledgets of cotton previously soaked in a 10 per cent. solution of cocaine.

In a few moments the cotton is removed and the affected side sprayed with glymol. Meanwhile, some wooden probes (as tooth-picks) are prepared by wrapping one end of each with a whisp of absorbent cotton. The patient is then told to take a deep inspiration, and to "hold it." Less than a drop of the fuming acid is taken up on one of the probes and quickly carried to the wound, directing the patient to exhale strongly through the nose. A minute eschar is formed, which drops during the healing—usually in a few days. Where the bleeding is active, and however profuse, several of these acid-tipped probes are inserted into the nose, cut off with strong scissors, just within the ala, and left in position one day or longer, the excess of acid being neutralized by the blood.

Of external medicines, the writer considers opium the most reliable. Of late the chloride of calcium has come into favor, and experiments of Dr. Wright, of Canada, proved that it greatly reduces the blood-coagulation time.

F. B. E.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOL-
OLOGICAL SOCIETY.

[PROCEEDINGS CONTINUED.]

Inflammations.

Dr. John A. Thompson, of Cincinnati, said that by intra-tracheal injections we get the direct action of the remedy on the diseased area. There were many proofs that tracheal injections were speedily absorbed, and they had the advantage of not being changed by the digestive processes as they were when taken into the stomach. The cure of a bronchitis by such direct medication, without interfering with digestion or appetite, was a distinct advance in therapeutics. In tuberculosis there was a mixed infection—a secondary infection with the germs of suppuration. A little menthol injected into a trachea would give greater and more prolonged relief than a large dose of morphine, given by mouth. The remedies should be soluble in the vehicle employed, the solutions should not be very irritating, and the drugs so used should be capable of volatilizing slowly at the temperature of the body. He had first become convinced of the great value of this method by observing its excellent results in pulmonary tuberculosis and chronic bronchitis. Where the remedies were not irritating, it was not necessary to use cocaine previously. He used from one drachm to four drachms at a sitting, and ordinarily there was but little coughing or strangling.

Dr. S. E. Solly, of Colorado Springs, said that the use of medicated vapors with the Globe inhaler was a very good substitute for the intra-tracheal injections, if employed with a good air pressure.

Dr. H. H. Curtis said that he had made use of an ordinary Chesebrough muriate of ammonia inhaler, which gave a very soft and pleasant vapor of the muriate of ammonia in combination with some aromatic oil. He also occasionally added a few drops of beechwood creosote to this mixture. For a number of years past he had used iodoform and ether in the same way with much satisfaction in cases of laryngeal phthisis.

Dr. Cline said that he was convinced that he had benefitted many cases of chronic bronchitis and tubercular disease by means of sim-

ilar inhalations. In this connection, Dr. Cline presented a little apparatus that he had devised for the purpose of warming sprays. It consisted of a tin box in which an incandescent resistance lamp was placed, together with a stand holding six spray tubes. By a proper arrangement of dampers the heat could be very easily controlled.

Dr. Logan said that it was very difficult to get medicated solutions carried into the lungs before condensation took place. The medication must be suspended in some fine oil, and a very fine nebulizer must be used. By the intra-tracheal method this difficulty should be largely obviated. The syringe should have a sufficiently large barrel to allow of making the whole injection at one time.

Dr. Sprague asked if Dr. Thompson had ever observed any pulmonary complications following the use of these intra-tracheal injections.

Dr. Thompson said that in chronic tuberculosis the symptoms had been aggravated by these injections. They were not tolerated in the first stage of acute bronchitis before there was any secretion, and the injections would cause an asthmatic attack, lasting, perhaps, for several hours. He believed that the same results could not be obtained from inhalations as from intra-tracheal injections. Owing to the rapid condensation of the vapor in treatment by inhalation, only a small proportion of the remedy could reach the lungs. The superiority of the method of intra-tracheal injections was due to the comparatively large dose that could be used. The gradual absorption of this vapor was what gave the prolonged effect of the remedy. A German investigator had shown by careful experimentation that guaiacol was much more efficient when introduced into the system unchanged by the digestive fluids.

SECOND DAY.—MONDAY, MAY 3D.

Electric Illuminator and Aural Speculum Combined.

Dr. J. E. Nichols, of New York, presented and demonstrated the action of a new electric-lighted aural speculum. It consists of a double speculum, the upper part of which contains an electric lamp, and the lower part the illuminating apparatus. A diaphragm extends half way through the lumen of the speculum. The back of the lamp is covered with a polished mirror. The electric light is thrown directly from the end of the speculum, and is focused upon the membrana tympani. The instrument can be adjusted to the head of the patient without difficulty. This allows the operator to use both hands.

A New Mechanical Saw.

Dr. William Scheppegrell, of New Orleans, presented a new saw for use on the nasal septum. (See p. 307, vol. 2, *THE LARYNGOSCOPE*.)

X-Rays in Rhinological Work.

Dr. Scheppegrell said that he had been experimenting with the X-rays for the past few months, and had not been impressed with their value in his particular line of work. He had been able by their aid to see the condition of the root of a tooth, and whether or not the antrum were filled with pus, but the general results with them in the antrum had not been good. He exhibited an X-ray photograph in confirmation of what he had said.

Vibration Figures Produced by the Human Voice.

Dr. H. Holbrook Curtis, of New York, said that Mrs. W. Hughes, in 1885, in London, first made experiments having for their object the demonstration of the vibrations of the human voice on stretched membrane. Figures were made in this way, not only with powders, but with pigments. These pigments would shoot and interlace and produce the most beautiful forms and variations of colors. By using a square instead of a circular bowl for the membrane, the serpent forms were produced.

Dr. Curtis presented pictures illustrating what he had accomplished in this direction. He had taken care to see that each note produced a certain definite figure. Slight variations in the timbre, and overtones would produce slight variations in the figures. In explaining the apparatus, he said that it took weeks to get the India-rubber diaphragm in a condition to respond delicately to the notes produced. Equal tension could only be secured by marking a small circle on the rubber, and then stretching the rubber in accordance with this outline. After having done this, the rubber should be daily, or oftener, excited to vibration by gently tapping or rubbing it. The pictures were as exact representations of the various tones as were the notes of different tuning-forks. Dr. Curtis, by means of a series of photographs of these figures, pointed out the relationships between the various tones and the construction of the chromatic scale.

Electric Saw.

Dr. F. C. Cobb, of Boston, presented a new electric saw. This saw only works when the little finger is pressed upon a button. He claimed that it was simple, durable and easily controlled.

Labyrinthine Phenomena Dependent upon Middle Ear Disease and Their Relief by Local Treatment.

Dr. Edward B. Dench, of New York, said that in the class of cases under consideration, physical examination would reveal a considerable retraction of the drum-membrane, and sometimes slight congestion of the manubrial plexus and peripheral plexus. The calibre of the Eustachian tube was slightly reduced, and the air entered the tympanum on catheterization, but produced a rough sound indicative of thick mucous adherent to the wall of the canal. Quite frequently the inflation caused a moderate amount of vertigo. There was often slight temporary improvement after the inflation, lasting a few hours. Sometimes rarefaction of the air in the middle ear would cause a concussion; the ossicular chain would be displaced inwards with considerable violence, and the stapedius and tensor tympani muscles being unable to take up the sudden pressure, the result would be concussion and trauma. This condition was found most frequently in neurotic persons. The fact that the functional examination showed no interference with sound conduction did not affect the value of this examination; it pointed out a hyperæsthetic condition of the apparatus. Treatment should be instituted early. These cases would often prove misleading unless the appearance of the drum membrane, the condition of the Eustachian tube, the history of the case and the result of the functional examination were all considered.

Dr. Snow said that about a year and a half ago a patient had come to him in whom the hearing in one ear had been nearly destroyed. The bone conduction was so much impaired that he looked upon the case as one of labyrinthine trouble. The other ear was the seat of considerable catarrhal disturbance. A very unfavorable prognosis was given regarding the poorer ear. He treated the nasal passages, and then turned the case over to an assistant. About six months from that time the lady returned to him with very good hearing in the bad ear. This had led him to question very much the original diagnosis.

Dr. Holt said that ten or fifteen years ago he had made some examinations into the nature of boilermakers' deafness. His investigation led him to believe that it was untrue that some people could hear better in a noisy than in a quiet place; it was an apparent condition only. Dr. Roosa had taken exception to this opinion, and had claimed that with a given amount of deafness, if the tuning-fork were heard longer by air than by bone, it was indicative of labyrinthine disease. He had met with people who could hear the tuning-fork longer by air than by bone, and, after treatment, this

condition would change about. He had been unable, therefore, to deduce any rule bearing on this point. He had never found any person who seemed to hear better in a noise, and Dr. Roosa had been unable to fortify his position by many cases.

Dr. Dench agreed with Dr. Holt's remarks regarding hearing in a noise. It seemed to be true, however, that in cases in which the middle ear was involved that there was paracusis, and where the middle ear was not involved, paracusis was not present. With reference to the reversal of bone conduction, he would say that many mistakes had been made in that. The point at which air conduction became greater than bone conduction in cases of defective hearing depended entirely upon the degree of deafness. If the hearing were slightly impaired, bone conduction would exceed air conduction for only the lower notes of the scale. The test should be made through the entire musical scale—at any rate, from 128 to 512 vibrations per second.

Dr. Scheppegrell agreed as to persons not hearing better in a noise, but undoubtedly they perceived sounds better. He had tested this in railroad cars, and had come to the conclusion that deaf persons very quickly became proficient in lip-reading. When talking in a noisy place, one enunciated more distinctly, and hence, the lip-reading was more easy.

Headaches from Nasal Causes.

Dr. Sargent F. Snow, of Syracuse, said that in 1894 he had published, in the *New York Medical Journal*, a paper on this subject, and at that time the literature had been quite meager. Dr. Harrison Allen had published perhaps the first authoritative paper on the relation of headaches to intra-nasal conditions. Dr. Hack, of Freiburg, seemed to be the pioneer in Europe to recognize that headaches were sometimes due to nasal conditions. The speaker said that he had selected from his cases, thirty of headache that had been referred to him by other physicians, and which had proved to be due to nasal causes. Sixteen of these were treated between 1891 and 1894, giving three to five years in which to judge of the results; ten of them showed 90 to 100 per cent. relieved of their headache. The youngest patient was 17 and the oldest 65 years of age. A large number were females; 60 per cent. were over 40 years of age. Of the 16 who received a full operative course, 90 to 100 per cent. reported improvement from the treatment. Operative work gave the quickest and best results. A little more of the offending overgrowth should be taken away than was necessary to relieve the pressure. The theory of headaches being due to stasis was sup-

ported by several eminent authorities, and should be given due weight. He was of the opinion that the recurrent attacks were due to the irritability of the nasal membrane, and recurring pressure on sensitive points. The relapses might be due to stasis. If stimulating applications were given once or twice a week, these patients remained comfortable. The best method was to spray the parts with iodol and ether (three grains to the ounce). There was a certain number of cases that could be successfully treated by relief of pressure contacts in the nose. About 70 or 80 per cent. of cases of hemicrania were due to removal causes located in the nasal passages. On examination, a bluish-red, relaxed appearance of the membrane would indicate that at times there were points of pressure. These cases did not require operative interference, but certain changes in the habits of life. About 90 per cent. could be relieved quickly by cleaning out the nostrils, using a spray of cocaine and following this by the iodol application.

Dr. W. C. Phillips asked if Dr. Snow had taken pains to find out if there were any definite symptoms which were characteristic of intra-nasal pressure.

Dr. H. H. Curtis said that he would be loath to have the statement go forth from this society that for chronic stenosis of the nose cocaine spray should be employed. In 1893 he had read a paper in the New York Academy of Medicine, comprising seventy cases, showing the disadvantages of cocaine, even when used in very dilute sprays in the nose. He would also protest emphatically against the use of menthol in the nose, for anything which would in this way reduce the turgescence and bring about a vaso-motor paresis would eventually make the condition much worse than at the beginning. It was becoming very common for people to use these sprays and applications, and they were leading to bad results and were exceedingly unscientific.

Dr. Cline said he would endorse what had been said by the last speaker. He could recall in his own practice three or four cases in which the cocaine habit had been established in this way. Among these patients were two physicians, one of whom was already in an insane asylum.

Dr. Root said he desired to add his testimony regarding the use of cocaine. He was reminded of a man who consulted him a year or two ago for exostosis of the nose, but who had failed to keep his appointment to have it removed. On his return the man was found to be addicted to cocaine. Dr. Root said that he never allowed a patient to use cocaine himself, and personally never used it in the fauces, believing it to be dangerous and valueless. He thought that the rhi-

nologists sometimes went a little too far in their enthusiasm. If a case presented a marked exostosis, or a hypertrophied turbinate, causing marked nasal obstruction, it should be operated upon—in other words, the main point was to operate so as to secure nasal breathing. However, it should be borne in mind that in doing this we should not destroy tissues put there by nature to perform a certain function. The nose was very tolerant of interference, yet it had been terribly abused in this respect.

Dr. Logan said that he had been a great sufferer from headaches. On relieving the stenosis of the upper nasal cavities the headaches had disappeared. In his opinion these headaches were due to improper drainage from the upper cavities and accessory sinuses.

Dr. Joseph A. White, of Richmond, said in his article, entitled "Nasal Reflex Neuroses," published in Burnett's System of Diseases of the Ear, Nose and Throat, he had given the entire literature of the subject of headaches of nasal origin. Headaches, he said, might result from any form of contact in the nose, but chiefly from contact of the middle of the septum with the turbinal. He had known nasal headaches to occur in cases in which there was no nasal obstruction whatever. Neuralgias of the first and second branches of the fifth nerve were particularly common from nasal conditions. He was satisfied that any contacts in the upper portion of the nose were likely to result in headache, whether or not they were sufficient to materially interfere with drainage.

Dr. W. H. Daly said that the fact should not be lost sight of that carbolic acid is a most valuable local anæsthetic. A solution of two to five grains to the ounce would answer for the nose. We had, as a profession, been led astray by the use of cocaine—indeed, he was inclined to think that cocaine had proved to be more a curse than a blessing. He had never used cocaine to any great extent, for he had long appreciated the valuable anæsthetic and antiseptic properties of carbolic acid.

Dr. Myles said that the paper under discussion had brought out some very salient points in regard to headache, yet he thought most those present would agree with him that nearly all middle turbinates were in contact with the septum; hence, this did not constitute any reason for operative interference. He had long ago noticed that the continuous application of cocaine for a number of hours produced a peculiar vaso-motor paralysis, and the turbinates became passively congested. From one or two applications of cocaine, at intervals of a few days, he had never seen any bad results. In the first few hours of an acute rhinitis, cocaine acted admirably, if only applied by the

physician. He never allowed the patient to use it, except for a few hours after the application of acid. He had been looking for ten years for a case of pure and simple cocaine habit—in other words, a person who did not use either morphine or whisky also.

Dr. Snow, in closing the discussion, said that he had intended to convey in his paper the idea that cocaine should be used only preliminary to the iodol and ether spray, and he would never be guilty of prescribing a cocaine spray for the patient. The good result following the iodol and ether spray was much more lasting than from cocaine. Nasal headaches were usually neuralgic or hemicranial in their character. We should not be satisfied with simply securing good nasal respiration; we should secure a free passage to the upper portions. It was true in many cases that the middle turbinate pressed against the septum without causing headaches, yet if such a condition existed in a neurotic subject, pressure at this point with a piece of cotton should be sufficient to excite great pain.

Operations on the Drum, Membrane and Ossicles for Improvement of the Hearing.

Regarding the results of this operation, Edw. S. Clark, in the *Pacific Medical Journal*, states that in no case has he operated when the patient was able to carry on a conversation at a greater distance than twenty centimetres (8 inches).

In twenty-six cases, after operation, hearing was: In one case six metres; one case, five metres; two cases, three metres; four cases, one to two metres; ten cases, slight improvement; six cases, no improvement, and in one case the patient lost what hearing he previously had.

F. B. E.

Mississippi Valley Medical Association.

The next meeting of the Mississippi Valley Medical Association will be held in Louisville on October 5, 6, 7 and 8, 1897.

All railroads will offer reduced rates.

The President, Dr. Thos. Hunt Stucky, and the Chairman of the Committee of Arrangements, Dr. H. Horace Grant, promise that the meeting will be the most successful in the history of the Association, and this promise is warranted by the well-known hospitality of Louisville and Kentucky doctors.

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